

VOLUME 14

Pages 3512 - 3826

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

Before The Honorable YVONNE GONZALEZ ROGERS, Judge

EPIC GAMES, INC.,)	
)	
Plaintiff,)	NO. C-20-5640 YGR
)	
vs.)	Thursday, May 20, 2021
)	
APPLE, INC.,)	Oakland, California
)	
Defendant.)	BENCH TRIAL
)	
APPLE, INC.,)	
)	
Counterclaimant,)	
vs.)	
)	
EPIC GAMES, Inc.,)	
)	
Counter-Defendant.)	
)	

REPORTER'S TRANSCRIPT OF PROCEEDINGS

APPEARANCES:

For Plaintiff: CRAVATH, SWAINE & MOORE, LLP
825 Eighth Avenue
New York, New York 10019
BY: KATHERINE B. FORREST, ESQUIRE
GARY A. BORNSTEIN, ESQUIRE
YONATAN EVEN, ESQUIRE
(Appearances continued.)

Reported By: Diane E. Skillman, CSR 4909, RPR, FCRR
Pamela Batalo-Hebel, CSR 3593, RMR, FCRR
Raynee Mercado, CSR 8258 RMR, CRR, FCRR

TRANSCRIPT PRODUCED BY COMPUTER-AIDED TRANSCRIPTION

1 For Plaintiff:

CRAVATH, SWAINE & MOORE, LLP
825 Eighth Avenue
New York, New York 10019

2 **BY: LAUREN A. MOSKOWITZ, ESQUIRE**
3 **JUSTIN C. CLARKE, ESQUIRE**
4 **W. WES EARNHARDT, ESQUIRE**
5 **BRENDAN BLAKE, ESQUIRE**
6 **JIN NIU, ESQUIRE**
7 **BRENT BYARS, ESQUIRE**

8 For Defendant:

GIBSON, DUNN & CRUTCHER
333 South Grand Avenue
Los Angeles, California 90071

9 **BY: RICHARD J. DOREN, ESQUIRE**
10 **DAN SWANSON, ESQUIRE**
11 **CYNTHIA RICHMAN, ESQUIRE**
12 **RACHEL BRASS, ESQUIRE**

GIBSON, DUNN & CRUTCHER, LLP
2001 Ross Avenue, Suite 1100
Dallas, Texas 75201

13 **BY: VERONICA S. MOYE, ESQUIRE**

14 PAUL WEISS RIFKIND
15 WHARTON & GARRISON LLP
2001 K STREET, NW
Washington, DC 20006

16 **BY: KAREN DUNN, ESQUIRE**
17 **JESSICA E. PHILLIPS, ESQUIRE**

18 For Defendant:

19 PAUL WEISS RIFKIND
20 WHARTON & GARRISON LLP
943 Steiner Street
San Francisco, California 94117

21 **BY: ARPINE LAWYER, ESQUIRE**
22
23
24
25

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1 THURSDAY, MAY 20, 2021

8:00 a.m.

2 P R O C E E D I N G S

3 **THE CLERK:** Calling Civil Action 20-5640, Epic Games,
4 Inc. versus Apple, Inc.

5 Counsel, please state your appearances.

6 **MS. FORREST:** Good morning, Your Honor. Katherine
7 Forrest for Epic.

8 **THE COURT:** Good morning.
9 Good morning, Ms. Moskowitz.

10 **MS. MOSKOWITZ:** Good morning, Your Honor.

11 **THE COURT:** Good morning, Mr. Niu.

12 **MR. NIU:** Good morning, Your Honor.

13 **THE COURT:** And, Mr. Sweeney, good morning.

14 **MR. SWEENEY:** Good morning, Your Honor.

15 **THE COURT:** Mr. Rudd, good morning.

16 **MR. RUDD:** Good morning.

17 **THE COURT:** Okay. On the Apple side, Mr. Doren.

18 **MR. DOREN:** Good morning, Your Honor.

19 **THE COURT:** And, Ms. Moye, good morning.

20 **MS. MOYE:** Good morning, Your Honor.

21 **THE COURT:** Ms. Dunn, good morning.

22 **MS. DUNN:** Good morning, Your Honor.

23 **THE COURT:** Ms. Adams?

24 **MS. DANSEY:** Ms. Dansey.

25 **THE COURT:** Ms. Dansey.

1 And Ms. Grenier?

2 **MS. GRENIER:** Yes. Good morning, Your Honor.

3 **THE COURT:** Good morning.

4 All right. Mr. Spalding.

5 **MR. ELTISTE:** No.

6 **THE COURT:** No.

7 **MR. ELTISTE:** It's Bret Eltiste.

8 **THE COURT:** Eltiste. Okay.

9 And then I think we've got Mr. Phillips back there?

10 **MR. PHILLIPS:** Good morning, Your Honor.

11 **THE COURT:** And who else?

12 **MS. RHO:** Good morning, Your Honor. This is Jennifer
13 Rho for Apple.

14 **THE COURT:** I can't hear. Maybe -- Ms. Moye, maybe
15 can help --

16 **MS. MOYE:** It's Jennifer Rho for Apple.

17 **THE COURT:** Jennifer Rho. Good morning.

18 **MS. MOYE:** And Stephanie Fine at Apple.

19 **THE COURT:** Okay. Thank you. Good morning.

20 **MS. FINE:** Good morning.

21 **THE COURT:** On the press side, we have Ms. Lopatto
22 from The Verge?

23 **MS. LOPATTO:** Good morning, Your Honor.

24 **THE COURT:** Good morning.

25 And Ms. Miller from MLex? Good morning. Welcome back.

1 And then Betsy Manifold from the class counsel?

2 **MS. MANIFOLD:** Good morning, Your Honor.

3 **THE COURT:** Good morning. Welcome back.

4 Ms. Behringer, good morning.

5 **MR. BEHRINGER:** Good morning, Your Honor.

6 **THE COURT:** Welcome back.

7 **MR. BEHRINGER:** Thank you.

8 **THE COURT:** I was also realizing that some of those
9 who are listening who aren't generally in courtrooms many
10 times find this boring. You know, we judges do talk to people
11 and we do talk to our jurors.

12 But with so many people listening, I just generally feel
13 like judicial chatter is probably not the best thing to have
14 happen in the courtroom, so I don't. But if you are ever in
15 my courtroom and you are a juror, we will have much more fun
16 discussions during the breaks.

17 We'll talk about the Warriors more, although I was very
18 disappointed. I said last night it was too much stress to
19 watch them. And then they were winning and they were winning
20 big, and I could hear my husband and my son yelling downstairs
21 so I turned it on, and then they started losing so I turned it
22 off. And then the dog and I just went to the other room.

23 Anyway, so here we are. Two more days and then argument.

24 Ms. Forrest, what do we have from your side?

25 **MS. FORREST:** Your Honor, one point of just

1 information and also a request as to your preference.

2 On the expert submissions, Apple has filed theirs on the
3 docket. We are prepared to do the same thing, but we also
4 wanted to ask Your Honor whether you would like hard copies of
5 those, or do you have more than enough paper?

6 **THE COURT:** I don't want hard copies. Look, I have
7 had the expert reports. I read them before we started. I'm
8 reading them again now because now they make more sense than
9 they did on the first go-around. I was not planning on going
10 back.

11 I thought what you were filing on the docket primarily
12 were things that reflected sealing or other issues. If there
13 are -- if there are material -- and I guess what I would do is
14 to the extent I am relying on something, I can go back to the
15 docket and figure out whether it was struck. I mean, if there
16 are material issues that you think were not proven or upon
17 which there was no factual basis, then the easiest thing would
18 just be to point that out to me so I can go and look.

19 But I'm not going to look at additional copies. I've got
20 my set.

21 **MS. FORREST:** We -- you know, I think that makes
22 perfect sense, and we don't even need to file anything on the
23 docket if what we can do is rely upon just sort of the rulings
24 that Your Honor has made as to what is struck or not struck.

25 What has been filed on the docket so far has just been by

1 Apple, just literally copies of the expert reports with the
2 rulings reflected in the filed copies. And we're prepared to
3 do the same thing if that would just make the docket complete.
4 But if Your Honor doesn't need that, we can stand down from
5 that.

6 **THE COURT:** Well, I think the docket should be
7 complete, because I don't expect -- look, I really -- like I
8 said, everybody is trying to read my mind. It doesn't matter.
9 You can't read it because I haven't decided what I am going to
10 do. That's the best defense to anybody reading anything.

11 But whatever happens, one or both of you aren't going to
12 be happy with the answer, and so it's going to go to the Court
13 of Appeal. So the docket has to be complete.

14 And I don't recall that those reports were ever filed. I
15 think you provided me with copies of them per my request, but
16 I don't think they were filed. So they do need to be filed.

17 **MS. FORREST:** All right. And Apple has filed theirs.
18 We will mirror that filing and not provide hard copies.

19 The second issue I just wanted to raise as a point of
20 information is we are actively determining whether or not we
21 will need to call any rebuttal witnesses. Part of that
22 depends on, frankly, what happens today because of some
23 witnesses that are going today. Our rebuttal witnesses would
24 be potentially responsive, and that's Mr. Lee and
25 Ms. Mathiowetz.

1 There is a possibility, Your Honor, of one other rebuttal
2 witness, who would have 10 to 15 minutes' worth of factual
3 testimony. We don't yet know, because we've had to locate
4 this person, if we are going to call them, but we will know
5 today.

6 And they would be responsive to testimony that has only
7 just come up and that was not originally in the findings of
8 fact of Apple, so it wasn't something we could anticipate.
9 And we are -- I've notified Mr. Doren of this. I think that
10 there may be a dispute as to whether we have missed the timing
11 cutoff for disclosure, but we have said we will let them know
12 as soon as possible and be prepared, if the person is called,
13 to make them available for deposition for an hour tomorrow
14 morning or something like that, very early, in advance.

15 We don't have to resolve this, the parties can continue to
16 have conversations about it, but I wanted to just let Your
17 Honor know that it is sort of out there in the ether.

18 **THE COURT:** Okay.

19 **MR. DOREN:** Your Honor, just so the record is clear,
20 there are two problems with that.

21 One is that in the stipulation filed at Docket 538, the
22 parties stipulated that Epic shall give Apple written notice
23 by 7:30 a.m. Pacific Time of any rebuttal witnesses to be
24 called on the trial day that begins 24 hours later, as well as
25 the order in which said witnesses will testify on that day.

1 That time has come and gone.

2 And that 24-hour period was negotiated as to rebuttal
3 witnesses specifically, as opposed to the 48-hour notice we
4 used for any case-in-chief witnesses. So that deadline is
5 gone. There should not be any surprise witnesses at this
6 time.

7 Secondly, the parties agreed that any witness that will
8 testify at trial would be deposed in advance of trial, before
9 trial, not during trial.

10 So for those two independent reasons, there should not be
11 any surprise rebuttal witnesses at this point in the case.

12 **MS. FORREST:** Your Honor, we can take this up later,
13 but let me just sort of respond to that very briefly.

14 There was a finding of fact in Apple's findings of fact
15 which did not indicate the information that it now indicates
16 through a redline and that there was testimony about. This
17 particular rebuttal witness would be directly responsive to
18 that.

19 We would ask that, based upon good cause, Your Honor --
20 this is an unanticipated event. It would be 10 to 15 minutes.
21 We would give Apple the opportunity for a deposition, and it's
22 still TBD.

23 **THE COURT:** There is nothing for me to rule on right
24 this second.

25 **MR. DOREN:** Yes, Your Honor.

1 **THE COURT:** Okay.

2 Mr. Doren, other issues from your side?

3 **MR. DOREN:** Not at this time, Your Honor.

4 **THE COURT:** While we were talking about -- we have
5 just a few minutes before we are supposed to start anyway, so
6 given that you were talking about process, let me ask for the
7 lawyers on both sides, maybe by the end of next week, it would
8 be helpful to me to have a joint email from the two sides
9 about what trial-related proceedings in terms of your
10 collaborations really worked and what didn't.

11 The reason that I ask that is, I have been asked to
12 participate in a course for judges dealing with antitrust
13 cases in the fall. And as I've said before, I appreciate --
14 and I can see it from my end -- all of the collaboration and
15 professionalism that has happened in this particular case. It
16 doesn't always happen in big commercial litigation trials.

17 And so to the extent that there are things that worked
18 very well for you, please let me know so I can let the judges
19 know and they can put those in pretrial orders.

20 So, like I said, it doesn't always happen, and to the
21 extent I can get better information on best practices, I would
22 be happy to communicate that.

23 **MS. FORREST:** We'll put something together, Your
24 Honor.

25 **MR. DOREN:** Agreed, Your Honor. Thank you.

1 **THE COURT:** Okay. Anything -- we don't have anything
2 else.

3 Can you tell me what the list of witnesses is today,
4 please?

5 **MS. MOYE:** Yes. We are going to start with Professor
6 Dominique Hanssens. Then we are moving to Professor Rubin --
7 Professor Malackowski and then Professor Rubin.

8 **THE COURT:** Okay. You may call your next witness.

9 **MS. MOYE:** Apple calls Professor Dominique Hanssens.

10 **THE CLERK:** If you will please remain standing, I
11 will swear you in.

12 **THE WITNESS:** Sure.

13 (**DOMINIQUE HANSENS**, called as a witness for the
14 Defendant, having been duly sworn, testified as follows:)

15 **THE WITNESS:** I do.

16 **THE CLERK:** Please be seated --

17 **THE WITNESS:** Thank you.

18 **THE CLERK:** -- and go ahead and get set. I'll wait
19 until you get set there. Be sure the mic is pointed
20 underneath the shield, and then would you please state your
21 full name and spell your last name.

22 **THE WITNESS:** My name is Dominique Hanssens,
23 H-A-N-S-S-E-N-S.

24 **THE COURT:** Good morning, sir.

25 **THE WITNESS:** Good morning.

1 **THE COURT:** Ms. Moye, you may proceed.

2 **MS. MOYE:** Thank you, Your Honor.

3 **DIRECT EXAMINATION**

4 **BY MS. MOYE:**

5 **Q.** Good morning, Professor Hanssens.

6 **MS. MOYE:** Your Honor, I have a book of exhibits that
7 may be used with the witness. I would like to approach.

8 **THE COURT:** You may.

9 **MS. MOYE:** Your Honor, we also have a binder for you.
10 We will not hopefully need all of those materials, I assure
11 you.

12 **BY MS. MOYE:**

13 **Q.** Good morning, Professor Hanssens.

14 **A.** Good morning.

15 **Q.** We have a deck of demonstratives that we would like to use
16 to aid with your testimony.

17 **MS. MOYE:** So could I have the first demonstrative on
18 the screen, please.

19 (Displayed on screen.)

20 **MS. MOYE:** Thank you.

21 **BY MS. MOYE:**

22 **Q.** Professor Hanssens, could you please tell us, what is your
23 current position?

24 **A.** I am currently a research professor at UCLA at the
25 Anderson School of Management.

1 Q. And would you please describe for us your educational
2 background?

3 A. Yes. I have an essential bachelor's degree in applied
4 economics from University of Antwerp in Belgium and a master's
5 and Ph.D. from Purdue University in management, with a focus
6 on marketing.

7 Q. What are your particular areas of research and expertise?

8 A. Well, in the field of marketing, I focus on empirical
9 research, on marketing effectiveness, consumer behavior. And
10 I do that using either transactional data or survey data.

11 Q. Have you designed and conducted surveys in the past?

12 A. Yes, I've done that many times. I've done that in the
13 context of some of my research articles; also in the context
14 of teaching, supervising a fairly large number of student
15 projects in our MBA program that are surveys; also in
16 commercial consulting engagements; and then, finally, in some
17 cases where I serve as an expert witness.

18 Q. Thank you.

19 MS. MOYE: And, Your Honor, we would like to tender
20 Professor Hanssens as an expert in marketing and surveys.

21 THE COURT: No objection?

22 MS. MOSKOWITZ: No objection, Your Honor.

23 THE COURT: He's admitted.

24 MS. MOYE: Thank you, Your Honor.

25

1 **BY MS. MOYE:**

2 **Q.** Professor Hanssens, could you look at the written direct
3 testimony that is in your binder? It should be behind the
4 second tab.

5 **A.** I see it.

6 **Q.** And, sir, is this the written direct testimony that you
7 prepared and submitted to the Court?

8 **A.** Yes, it is.

9 **Q.** And is it all truthful?

10 **A.** Yes, it is.

11 **Q.** Do you have any changes that you feel you need to make to
12 that report today?

13 **A.** I do not.

14 **MS. MOYE:** Your Honor, my understanding is that the
15 written direct testimonies are the subject of a stipulation
16 between the parties. We would ask that Professor Hanssens'
17 written direct be provisionally admitted pending that
18 stipulation.

19 **THE COURT:** So admitted.

20 **MS. MOYE:** And I think it bears the designation
21 "Expert 10" -- we are using different numbers for the
22 experts -- "Defendant Expert 10."

23 **THE COURT:** I think there is a document on the file
24 that has all of the exhibit numbers for the expert directs.

25 **MS. MOYE:** Okay. Thank you, Your Honor.

1 **THE COURT:** And rebuttals.

2 **MS. MOYE:** Thank you, Your Honor.

3 And we have a number of exhibits that apply to Professor
4 Hanssens' work. They are also the subject of a stipulation
5 between the parties that has been filed but not admitted. So
6 we won't do that now.

7 **THE COURT:** So this was -- it is on the docket now
8 and I have not yet addressed it. Was it before Docket 635?

9 **MS. MOYE:** I would have to get the specific docket
10 number for you, but, yes, my understanding is that it is
11 pending but has not yet been ruled upon.

12 **THE COURT:** Oh, okay. I'll double-check.

13 Go ahead.

14 **MS. MOYE:** Thank you.

15 Could we have the second demonstrative, please?

16 (Displayed on screen.)

17 **BY MS. MOYE:**

18 **Q.** Professor Hanssens, can you describe for the Court, what
19 was your assignment in this case?

20 **A.** Yes. In this matter, I was asked to do two things.

21 First of all, I was asked to design and conduct a survey
22 of iOS device users in the United States, those who are of
23 ages 13 and up.

24 **Q.** And what was the second survey you were asked to prepare?

25 **A.** The second survey was to do a review and also evaluate the

1 survey work that was done by Professor Rossi in this case.

2 Q. Let's talk about the two surveys you designed.

3 What were they called?

4 A. I am sorry. There was one that was called the iOS app
5 survey. And that is for people who meet this time that I've
6 already mentioned who actually visited the App Store and
7 downloaded at least one app in the last 12 months.

8 Q. And the second survey?

9 A. The second survey, which we call the iOS *Fortnite*
10 survey, that was done for people who actually play *Fortnite* on
11 the iOS devices, also in the last 12 months.

12 Q. And what was the age range for the participants in your
13 surveys?

14 A. In both cases, it was ages 13 and up.

15 Q. And why did you select that age range?

16 A. That age range was selected because the Epic Games, and in
17 particular *Fortnite*, is a game that is recommended for people
18 ages 13 and up, and, in fact, their major target demographic
19 includes that age, 13 and up.

20 Q. Were males and females equally weighted in your iOS
21 *Fortnite* survey?

22 A. No. In the second survey there was a predominance of
23 males, because that is also the stated target market for
24 *Fortnite*.

25 Q. Were you concerned at all about surveying those who were

1 younger than 17 or 18 years old?

2 **A.** I was not, given that we had parental consent.

3 **Q.** And can you just describe for the Court what steps were
4 taken to obtain parental consent?

5 **A.** Yes. These are steps that were -- that are sort of
6 standard procedure with the internet panel provider, as well
7 as the market research firm. There are two kinds.

8 One is there are cases where the parents have previously
9 granted permission for their son or daughter to participate in
10 surveys, so that permission was granted previously.

11 And then there are also cases where the parent was
12 initially contacted and then was asked if the son or daughter
13 was available, if it would be okay for the son or daughter to
14 take the survey. So the parental permission in this case was
15 sort of instant.

16 **Q.** And you mentioned with respect to both of those surveys
17 asking for information about the last 12 months.

18 Why did you include a 12-month period in your surveys?

19 **A.** I used 12 months because I wanted to filter out possible
20 seasonal effects in usage. So, for example, if the last month
21 was one with a lot of vacation days in it, the usage of many
22 people might be different. By that I mean, the electronic
23 device usage might be different from a month in which there
24 are very few holidays or none at all. And so that can be
25 filtered out by taking a 12-month horizon.

1 **MS. MOYE:** Okay. Let's look at the third
2 demonstrative.

3 **BY MS. MOYE:**

4 **Q.** And I would like to talk about the questions you asked in
5 the iOS app survey.

6 Can you tell us, what was the main goal of that survey?

7 **A.** Well, the main goal was for those people who qualified,
8 however we defined that, the extent to which they use other
9 electronic devices, in other words, non-iOS devices, and,
10 specifically, the extent to which they use those other devices
11 on a regular basis. That was the first goal.

12 And then the second goal was to find out if there were yet
13 other electronic devices that they could have used on a
14 regular basis because they were available, but they chose not
15 to.

16 **Q.** And we see the phrase "regularly used."

17 Can you explain why you chose that language?

18 **A.** Yes. That language was chosen deliberately because it's
19 understood that a certain device may be used regularly by one
20 person, let's say, on a daily basis, and for another person it
21 may be on a weekly basis or even a monthly basis, but both of
22 them would be regular.

23 So the focus here is on the recurring behavior, not on the
24 frequency. And that's why we used that term, which we
25 pretested and turned out to not be problematic at all.

1 Q. You also have the language "available for regular use."

2 What does "available" mean there?

3 A. Yes. The -- "available," once again, is a very easily
4 understood English term, and we gave some examples to make
5 sure people understood the context. Those were devices -- or
6 are devices that are, for example, present in the household of
7 the respondent or maybe at work, anyplace that -- where there
8 would be regular availability.

9 However, even though the device is available for regular
10 use, this -- or a particular respondent doesn't necessarily
11 use it on a regular basis. So it expands the availability
12 set.

13 Q. And did I hear you correctly, did you actually provide
14 some text to describe what "available" would mean?

15 A. Yes, I gave examples. I forget the exact wording, but it
16 is, "For example, your family members may have that device.
17 And so it hangs around the house, you can use it if you like.
18 Whether or not you do on a regular basis is up to you, as a
19 respondent."

20 MS. MOYE: And let's look at the next demonstrative
21 and talk about the iOS *Fortnite* survey.

22 BY MS. MOYE:

23 Q. Did you ask the same questions in that *Fortnite* survey as
24 you had in your iOS app survey?

25 A. Well, the first two questions were pretty much the same,

1 yes, did they regularly use other electronic devices or did
2 they -- were there other devices that were available to them
3 that they did not regularly use. Those are the same.

4 Then there was an additional question specifically for
5 iOS *Fortnite* users, and that is whether they play digital
6 games on any of these other electronic devices that they have
7 stated they regularly use.

8 **Q.** And let's focus on the language regarding "other
9 electronic devices" in this iOS *Fortnite* survey.

10 Were "other electronic devices" defined the same way in
11 the *Fortnite* survey as in the iOS app survey?

12 **A.** Yes. Those are, basically, devices on which you can play
13 digital games.

14 **Q.** Thank you, sir.

15 Now let's turn to your results.

16 **MS. MOYE:** If we can have the next demonstrative.

17 **BY MS. MOYE:**

18 **Q.** Could you describe for the Court what results you received
19 in your surveys?

20 **A.** Sure.

21 This was a very straightforward survey, and so the results
22 are also easy to represent here in this one slide; that in
23 the iOS app survey, we see 92 percent regularly used other
24 electronic devices in the last 12 months; for the iOS
25 *Fortnite* survey, that number is a little higher, it is 97; and

1 then in both cases, 99 percent have other devices available to
2 them for regular use without necessarily using them. So the
3 set is the same there in both cases. And I think I summarized
4 that as referring to that as the vast majority.

5 **Q.** Thank you, Professor Hanssens.

6 Did you do anything to check the robustness of your survey
7 results?

8 **A.** Yes, I did.

9 **MS. MOYE:** Could we see the next demonstrative,
10 please?

11 I am sorry, I skipped one item.

12 **BY MS. MOYE:**

13 **Q.** Was there additional data from the iOS *Fortnite* survey
14 that you determined?

15 **A.** Yes. So as you may recall, there was one extra question
16 for the *Fortnite* players, and that was with respect to them
17 playing digital games on other electronic devices. And that
18 number is 94 percent, as you see there.

19 **Q.** Thank you, sir.

20 And now let's go back to robustness.

21 **MS. MOYE:** Next demonstrative, please.

22 **BY MS. MOYE:**

23 **Q.** Would you describe, please, what are the robustness checks
24 you did?

25 **A.** Yes. In survey research, when you draw conclusions, it is

1 important to satisfy yourself as a researcher that these
2 results hold for reasonable subsamples. And that is exactly
3 what I did.

4 So, for example, if I look only at people who state that
5 they use an iPhone, do we still get that overall result,
6 versus people who only use an iPad, versus people who use
7 both. That's the first breakdown there, compared themselves
8 to iOS device.

9 When it says "no material change," what I mean by that is
10 that we still find this substantial majority or vast majority
11 result, and so my conclusions are the same.

12 Secondly, and also in -- standard in market research, we
13 checked whether or not people who answered the survey
14 relatively quickly or very slowly might have been inattentive
15 or rushing through, et cetera. And so we discarded those
16 people -- I think in my case it was people who answered the
17 survey in less than 2 minutes or more than 14 minutes -- just
18 to assure ourselves that those results are still similar. And
19 they are. There, again, we find the same results.

20 **Q.** Did you -- you mentioned 2 minutes and a longer period of
21 time.

22 Did you also do an additional robustness check using a
23 different lower-range number?

24 **A.** Well, I did, because there was some feedback on my work
25 from another expert who said that maybe you should check under

1 3 minutes.

2 And so I did that. So it's the same test except now it is
3 anybody who answers the survey in under 3 minutes, as opposed
4 to 2. And, again, the results were the same.

5 **Q.** And then you have a final robustness check on our slide
6 here related to Microsoft Windows smartphones.

7 Could you describe that for the Court?

8 **A.** Yes. That check is also done in response to a comment by
9 another expert, and that comment was that while Microsoft does
10 have smartphones on the market, they have not been very
11 successful, commercially, that is. And yet a number of people
12 indicated that either they were available to them or they
13 regularly used them, and so that number was perhaps somewhat
14 surprising.

15 And so as a result of that, I tested the possibility that
16 maybe these people didn't quite get it right or were
17 inattentive, and I excluded all of them. In other words,
18 anybody who said that they either regularly used a Windows
19 phone or that they had access to one for regular use was
20 excluded, regardless of whether they were right or wrong about
21 that.

22 And when I do that test, once again, I find that the
23 results are basically the same as before.

24 **Q.** Did Dr. Rossi collect usage data in the survey work he
25 did?

1 **A.** Yes, he did.

2 **MS. MOYE:** And if we can have the next demonstrative.

3 **BY MS. MOYE:**

4 **Q.** Did you look at the results he obtained in connection with
5 evaluating your work?

6 **A.** Well, yes, I did.

7 **Q.** Did Dr. Rossi collect the same type of usage data as you
8 had collected?

9 **A.** Well, it is similar, but it's not quite the same. You
10 know, his sample is a bit different. Also, he did not use the
11 word "regular use"; he just asked about use. And, finally, he
12 did not stipulate a timeline like I did with my 12 months; he
13 just said Which devices do you use?

14 But -- and in spite of these differences, you see that the
15 results, in essence, completely corroborate my findings of a
16 vast majority using either any electronic devices or non-Apple
17 electronic devices.

18 **Q.** And what percentage of the respondents in Professor
19 Rossi's survey reported usage of another electronic device?

20 **A.** That would be 98 percent.

21 **Q.** And what percentage of the respondents -- excuse me, I'm
22 having a little bit of an allergy issue here -- what
23 percentage of the respondents in Professor Rossi's survey
24 reported usage of other non-Apple electronic devices?

25 **A.** That would be 93 percent.

1 Q. Okay. Now, let's turn to the second part of your
2 assignment, which was evaluating Professor Rossi's work.

3 What did you find?

4 A. Well, I found that in Professor Rossi's -- in the
5 execution of his work, there were several areas of concern to
6 me, especially since his survey is one in which he explores a
7 hypothetical scenario. That's not something that I did; I
8 just did actual usage. He looked at people's hypothetical
9 behavior under the conditions of a 5 percent price increase in
10 the App Store.

11 MS. MOYE: Let's look at the next demonstrative.

12 BY MS. MOYE:

13 Q. Did you do an evaluation in particular of whether
14 Professor Rossi had done a proper pretest for his survey
15 instrument?

16 A. Yes, I did.

17 Q. And could you explain to the Court what your conclusion
18 was on that?

19 A. Well, the overall conclusion is that, like me, I did -- or
20 he did -- I am sorry -- he did a pretest on the first draft.
21 That's the top line you see there starting in December, on
22 December 23rd of last year. He calls that an unstructured
23 pretest. That really is just a pretest, just like I did.

24 But then subsequently, or as a result of this pretest, he
25 made some fairly substantial changes because of problems that

1 he discovered in that first version. And as a result, he had
2 a rather different Version 1, as he calls it, and subsequently
3 Version 2 and subsequently Version 3. So he had three rounds
4 of changes, but none of those were pretested.

5 Now, he says that he did structured pretests in those, as
6 you see there, but that is really a pilot test. In other
7 words, it is a test of some people, but there is no subsequent
8 interview. And that's -- so that -- by standard survey
9 language or jargon, those are not pretests.

10 Q. And is this terminology, "unstructured pretests" and
11 "structured pretests," is that used in your industry?

12 A. Well, it may be that I'm not aware of it. It is certainly
13 not standard.

14 Q. You have a column on testing with respondent interviews.
15 Do you see that?

16 A. I do.

17 Q. Are interviews always conducted in a pretest?

18 A. Yes.

19 Q. Are interviews an important portion of the pretest
20 process?

21 A. Absolutely.

22 Q. Did Professor Rossi conduct any interviews of those who
23 took -- of his final survey instrument?

24 A. No, he did not.

25 Q. And when was Professor Rossi's final Version 3 taken

1 through what he calls this structured pretest phase?

2 **A.** His final pilot was on January 19 of this year.

3 **Q.** And when did he actually deploy his final survey?

4 **A.** It was the next day, January 20th.

5 **Q.** Were there any changes made between that Version 3 on
6 January 19th, 2021, and then the version that went out in the
7 field for his results starting on January 20?

8 **A.** No. His Version 3 is the same as his final survey.

9 **Q.** Do you believe, Professor Hanssens, that Professor Rossi's
10 failure to pretest his final survey instrument may have had an
11 impact on the reliability of his results?

12 **A.** Yes, I do.

13 **Q.** Let's look first at the hypothetical price increase
14 scenario presented in Question 16 of Professor Rossi's survey.
15 This says "V2," sir.

16 Would you identify which Question 16 this was?

17 **A.** Well, it's printed there. He shows the hypothetical with
18 the 5 percent price increase, and then he specifically asks --
19 you see that right below the box -- if that price increase
20 would cause you to make fewer purchases in the future. So it
21 is a forward-looking question.

22 **Q.** And is this the actual question that went out to the field
23 to get results?

24 **A.** You mean for the final survey?

25 **Q.** Yes.

1 **A.** No.

2 **Q.** So this was an earlier draft of the question, correct?

3 **A.** It is V2, and it was changed in V3.

4 **Q.** So in this draft, there was a hypothetical future price
5 increase that was inquired about; is that right?

6 **A.** Yes.

7 **Q.** And how would a respondent indicate that they would not
8 make a change in response to that hypothetical future increase
9 in this version of the question?

10 **A.** Yeah. Well, if you are a sticker, to use Professor
11 Rossi's language, you would answer "No."

12 **Q.** And could you read for us the "No" answer that is there?

13 **A.** Sure. It says, "No, the price increase would not cause me
14 to make fewer purchases from the App Store."

15 **Q.** Okay. And let's look at this same question in the final
16 survey that Professor Rossi used to get his results.

17 **MS. MOYE:** And I don't know if we can blow that up a
18 little bit. It is at least hard to read on my screen.

19 Your Honor, the demonstratives are also behind the first
20 tab in your book, if that is easier.

21 **THE COURT:** I have it. Thank you.

22 **BY MS. MOYE:**

23 **Q.** Was there still a future-looking hypothetical price
24 increase in the final survey?

25 **A.** No. That has changed.

1 Q. And describe what kind of hypothetical price increase was
2 included.

3 A. The hypothetical now goes as follows: "Suppose that the
4 5 percent price increase had occurred 30 days ago," and then
5 it's a backward-looking question that basically says, "would
6 you have made the same purchases or not?" So it's a
7 backward-looking question rather than a forward-looking
8 question.

9 Q. And what answer would respondents select to indicate they
10 would not make a change in response to this backward-looking
11 hypothetical price increase in the final survey?

12 A. Well, again, using Professor Rossi's language, if you are
13 a sticker, then this time you answered "Yes," as opposed to
14 "No." I can read it. "Yes, I would have made the same
15 purchases and spent" -- whatever.

16 Q. Did the use of a backward-looking price increase scenario
17 cause you to have any concerns, Professor Rossi [sic]?

18 A. Yes, it does.

19 Q. Would you describe those concerns?

20 A. Well, the concern is as follows: When a consumer decides
21 to react or not to a price change and let's say they still go
22 with the purchase, they take the risk -- because it is a price
23 increase, they take the risk of not being satisfied with the
24 product and paying more for it.

25 If you move the clock back 30 days, then you already know

1 what your experience has been because you have actually
2 purchased that subscription or that particular app. And so in
3 that case, two elements are conflated: The notion of price
4 reaction and the notion of satisfaction with the existing
5 product. And that conflation causes me some concern.

6 **Q.** Could that kind of conflation result in any type of impact
7 on how many people would pick a solution that they would not
8 make a change?

9 **A.** I believe so, yes.

10 **Q.** And what impact would it have?

11 **A.** Well, on the mild assumptions that these apps are pretty
12 good, you would see that people might say, well, okay,
13 5 percent more, but these were good experiences for me so I
14 would have done the same thing; in other words, I would not
15 have changed my behavior. So it will increase the percent of
16 stickers, again in the Rossi language.

17 **Q.** Have you done any assessment as to whether the changes
18 from a forward-looking hypothetical price increase with a "No"
19 answer for a sticker to a backward-looking hypothetical price
20 increase with a "Yes" answer for a sticker created any
21 concerns in the reliability of Professor Rossi's results?

22 **A.** Yes, I have.

23 **MS. MOYE:** Could we look at the next demonstrative,
24 please?

25 (Displayed on screen.)

1 **BY MS. MOYE:**

2 **Q.** Is this one of the assessments that you prepared?

3 **A.** Yes, this is one of two assessments.

4 **Q.** And would you explain what is conveyed here?

5 **A.** Well, what is conveyed here is the difference in the
6 people who are saying "I don't know" to the question, which is
7 either -- to the hypothetical, which is either worded in V1
8 and V2 as forward-looking, as I mentioned earlier, or in V3
9 and the final survey as backward-looking. And as you see, the
10 percentages go up from 4 to 10.

11 Now, Professor Rossi actually found out in his very first
12 pretests -- or I should say in his only pretest -- he found
13 that there was some confusion about the questions -- or that
14 question, and so -- and then he made these changes.

15 Well, he didn't really solve the confusion if now more
16 than twice as many people say, "I don't know." So that causes
17 me some concern.

18 **Q.** Thank you, sir.

19 And did you do any assessment to determine whether the
20 possibility of the "No" to "Yes" change may have impacted
21 Professor Rossi's results?

22 **A.** Yes, I did.

23 **MS. MOYE:** Could we see the next demonstrative,
24 please?

25 (Displayed on screen.)

1 **BY MS. MOYE:**

2 **Q.** Would you explain that assessment for the Court?

3 **A.** Sure.

4 So you now see, again, V1, V2 combined versus V3 and final
5 survey. So the axes are the same.

6 Under the V1 and V2 scenario, which has the "No" as an
7 answer to the stickiness question -- pardon my language -- is
8 51 percent. So 51 percent of the people in that scenario say
9 that they would not make fewer purchases as a result of the
10 price increase.

11 But then when you go to the V3, which is also the final
12 survey, now it's suddenly 73 percent. And so that's -- and,
13 by the way, the 73 is statistically different from the 51. So
14 the 73 is what he used in his final survey. Had he used V1 or
15 V2, he would have found 51.

16 **Q.** Do you think, based on academic literature, that the
17 change from a "No" answer to a "Yes" answer for a sticker
18 actually mattered in terms of the outcome?

19 **A.** Yes. That is an example of something in the literature
20 called acquiescence bias or, in popular terms, yea-saying.
21 It's sort of the general tendency to be nice to the
22 interviewer or to the surveyor and say -- and to go along with
23 the question. And that is an example here of what happened.

24 **Q.** Do you believe the number of people who reported they
25 would stick, that they would not make a change, could be

1 inflated as a result of Professor Rossi's decision to change
2 from a "No" to a "Yes" answer for a sticker?

3 **A.** Yes, that number could be inflated.

4 **Q.** And if the number of people that he determined were
5 stickers actually was inflated, what would be the impact on
6 any price elasticity calculation that he performed?

7 **A.** Well, since you now have more people who say that they do
8 not react to the price increase, by definition, you will now
9 have a smaller elasticity in absolute value than otherwise.

10 **Q.** Thank you, sir.

11 And the Court has heard testimony from Professor Rossi
12 where he uses a figure of 81 percent for those who would not
13 make a change.

14 Can you explain how that number compares to your
15 73 percent number?

16 **A.** Yes. That is just a definitional change. His 81 percent
17 is among the deciders, whereas the 73 percent that you just
18 saw is among all those who answered the question. So it is
19 just a different denominator.

20 **Q.** Okay. And, Professor Hanssens, how does your survey work
21 compared to Professor Rossi's?

22 **A.** Well, I would say that setting aside sample differences
23 and execution differences, that the main difference is that
24 all I did was ask people about their actual usage -- it's
25 actually very straightforward -- whereas Professor Rossi

1 actually delved into the hypothetical of how you would react
2 to a hypothetical price -- 5 percent price increase. I would
3 say that that is the major difference.

4 **Q.** Did you pretest your survey instrument, Professor
5 Hanssens?

6 **A.** Yes, I did.

7 **Q.** And did you pretest the survey instrument that you
8 actually used in the field?

9 **A.** Yes, I did.

10 **Q.** In your expert opinion, Professor Hanssens, are the
11 results that Professor Rossi obtained from the
12 backward-looking hypothetical price increase scenario he
13 presented reliable?

14 **A.** Well, for reasons I explained, I do not think they're
15 reliable.

16 **MS. MOYE:** Thank you.

17 I pass the witness.

18 **THE COURT:** Ms. Moskowitz.

19 **MS. MOSKOWITZ:** Thank you, Your Honor.

20 **THE COURT:** And with respect to the exhibits, there
21 is no objection -- I'm looking at -- this is Docket 641 -- I
22 take it, Ms. Moskowitz?

23 **MS. MOSKOWITZ:** And that's referring to the
24 stipulation with the exhibits? Yes, we are agreed.

25 **THE COURT:** Okay. So those will be admitted. I

1 believe the order is being posted this morning.

2 **MS. MOYE:** Your Honor, I have Docket 682 as the
3 expert --

4 **THE COURT:** Okay. Sorry. There's --

5 **MS. MOYE:** -- if it's related to this one.

6 **THE COURT:** -- 641 and 682, but you're right.

7 **MS. MOYE:** Thank you.

8 **MS. MOSKOWITZ:** Your Honor, may I approach with some
9 binders?

10 **THE COURT:** You may.

11 **MS. MOSKOWITZ:** Thank you.

12 I fear there may have been some duplication between the
13 parties. Maybe we will do that better next time.

14 **THE COURT:** This has all the exhibits?

15 **MS. MOSKOWITZ:** It does, Your Honor, all the exhibits
16 for Professor Hanssens.

17 Your Honor, may I proceed?

18 **THE COURT:** You may.

19 **MS. MOSKOWITZ:** Thank you.

20 **CROSS-EXAMINATION**

21 **BY MS. MOSKOWITZ:**

22 **Q.** Good morning, Dr. Hanssens.

23 **A.** Good morning.

24 **Q.** Okay. You do not consider yourself an expert on general
25 survey design, correct?

1 **A.** On general survey design, if it's in marketing, the answer
2 is yes. In general, probably not.

3 **Q.** Okay. So you do not consider yourself an expert on
4 general survey design, correct?

5 **A.** Correct, yeah.

6 **Q.** And you don't recall if you've ever testified as an expert
7 in any antitrust litigation, correct?

8 **A.** Antitrust, I cannot remember.

9 **Q.** And you do not recall ever having conducted a survey about
10 smartphones, correct?

11 **A.** Do you mean in a litigation setting or do you mean in
12 general?

13 **Q.** I mean you don't recall ever having conducted a survey
14 about smartphones, right?

15 **A.** Well, I probably have in the context of --

16 **Q.** I'm not asking about probably; I'm asking if you recall
17 having done so. And we can refresh your recollection on your
18 deposition if you --

19 **A.** Okay.

20 **Q.** -- need it.

21 **A.** Specifically, no.

22 **Q.** Okay. All right. Let's talk about the surveys you are
23 offering here today.

24 You did not speak to Professor Lafontaine at all in
25 connection with this litigation, correct?

1 **A.** That is correct.

2 **Q.** You are not familiar with the market definition work that
3 Professor Lafontaine did, correct?

4 **A.** That is correct.

5 **Q.** You were not aware, when conducting -- designing or
6 conducting or writing your surveys or report, that your
7 results would be used by the Apple economist, Professor
8 Lafontaine, in her market definition exercise; is that right?

9 **A.** That is right.

10 **Q.** In fact, you still don't have an understanding as to how
11 your surveys were used by Apple's other experts in this case,
12 correct?

13 **A.** That is correct.

14 **Q.** You have not heard the phrase "SSNIP test" before, right?

15 **A.** Actually, I have now.

16 **Q.** In the deposition was the first time?

17 **A.** Correct.

18 **Q.** Okay. And so other than me asking you about it in your
19 deposition, you had not heard of a test that studies small but
20 significant non-transitory increase in price, right?

21 **A.** That's correct.

22 **Q.** So it's fair to say, then, that you did not conduct a
23 SSNIP test here, right?

24 **A.** I did not do a SSNIP test, that's correct.

25 **Q.** And you do not recall ever being involved in any survey to

1 obtain information that would be an input into such a study,
2 correct?

3 **A.** That is correct.

4 **MS. MOSKOWITZ:** All right. I have a set of
5 demonstratives, as well. I'm going to please ask Mr. Rudd to
6 put up a slide showing the market definition exercise that
7 Professor Lafontaine did.

8 **BY MS. MOSKOWITZ:**

9 **Q.** Professor Hanssens, you've never seen this before, right?

10 **A.** That is correct.

11 **Q.** All right. She writes here:

12 "Market definition is fundamentally about demand
13 substitution, whether customers are willing and able
14 to substitute if terms of trade worsen, including if
15 quality decreases or price increases."

16 Do you see that?

17 **A.** I do.

18 **Q.** All right. So you see here Professor Lafontaine uses the
19 word "substitute."

20 Do you see that?

21 **A.** I do.

22 **Q.** Your surveys did not address substitution at all, right?

23 **A.** That is correct.

24 **Q.** She uses the phrase "able to substitute."

25 Do you see that?

1 **A.** I am sorry, I didn't hear the word --

2 **Q.** "Able to substitute."

3 Do you see those words?

4 **A.** Oh, yes, "able to substitute." Go ahead.

5 **Q.** Okay. Your surveys did not assess whether respondents
6 have the ability to make a substitution to other electronic
7 devices, correct?

8 **A.** That, I'm not so sure, because I have an availability
9 statistic.

10 **Q.** Okay. Your surveys did not assess whether respondents
11 have the ability to make a substitution to other electronic
12 devices. "Yes" or "No"?

13 **A.** Ability -- that's -- I agree. I forget if it is "Yes" or
14 "No." I agree with your statement.

15 **Q.** You agree that your surveys did not assess whether
16 respondents have the ability to make a substitution to other
17 electronic devices.

18 **A.** Correct.

19 **Q.** Thank you.

20 You asked respondents, you talked on direct, about their
21 device usage over the last 12 months, right?

22 **A.** Yes.

23 **Q.** And the 12-month reference period that you use does
24 include current use or availability, but it is not limited to
25 current use and availability, correct?

1 **A.** That is correct.

2 **Q.** So it is possible that by using that 12-month reference
3 period, your results may include devices that respondents used
4 or had available to them in the last 12 months but they do not
5 currently use or have access to, right?

6 **A.** That is technically a possibility.

7 **Q.** And you did not tell survey respondents to exclude devices
8 that they no longer use in their responses, right?

9 **A.** That is correct.

10 **Q.** You agree that an individual cannot substitute something
11 for something else if they do not have that something
12 currently available to them, right?

13 **A.** Agreed.

14 **Q.** Professor --

15 **MS. MOSKOWITZ:** If we could keep that slide up. I am
16 sorry.

17 **BY MS. MOSKOWITZ:**

18 **Q.** Professor Lafontaine also uses the phrase "willing to
19 substitute."

20 Do you see that?

21 **A.** Actually, I don't.

22 **Q.** Sure. The --

23 **A.** Oh, the second --

24 **Q.** -- second line.

25 **A.** -- line. Yeah, I see it now.

1 Q. Okay. Your surveys did not assess whether consumers are
2 willing to use other electronic devices, right?

3 A. That is correct.

4 Q. Your surveys did not assess whether respondents have the
5 desire or the preference to switch to another device, right?

6 A. That is correct.

7 Q. You talked on direct the phrase "available to regularly
8 use" was part of your survey, right?

9 A. Yes.

10 Q. So when you -- you talked a few times -- I think you
11 mentioned -- I think I counted twice that you said you studied
12 actual usage, right?

13 A. Yes.

14 Q. But you also asked people what they could have done but
15 did not do, right?

16 A. Yes.

17 Q. So that's the opposite of actual usage, right?

18 A. Well, it's actual usage -- actual usage I've already
19 established, and then that other element is what was your
20 total availability.

21 Q. Right, what could you have done but you didn't do it.

22 A. Well, right.

23 Q. Okay. All right. So you also mentioned you gave some
24 examples of what "available to regularly use" would be, right?

25 A. Yes.

1 Q. And on direct, I wrote it down. You said household
2 devices or work.

3 Those were the examples you gave?

4 A. As I recall, yes.

5 Q. Yeah, and like family member?

6 A. For example.

7 Q. Right. But you didn't mention the other example that you
8 actually gave your respondents, which was a friend, right?

9 A. I am sorry, I haven't understood your question.

10 Q. Do you remember that the actual language of what you gave
11 to your respondents said an example would be "the smartphone
12 of a member of your household or of a friend that you could
13 have regularly used, but that you did not regularly use in the
14 last 12 months."

15 A. Agreed.

16 Q. All right. So the "friend" is one of the people that
17 might -- you wanted respondents to think about about their
18 devices.

19 A. It's another example.

20 Q. You did not try to understand, through your surveys,
21 though, the specific use for which a device may or may not be
22 available, correct?

23 A. Correct with one exception.

24 Q. It's not correct as I said it?

25 A. Well, I did ask in the *Fortnite* survey if they used these

1 other electronic devices for game playing. So that's a
2 specific use, if I understood your question correctly.

3 **Q.** For availability, when you asked people what other devices
4 they had available to them, for the purposes of calculating
5 your 99 percent, you did not ask or try to ascertain the
6 specific use for which that device may or may not be
7 available, correct?

8 **A.** That is correct.

9 **Q.** So "available to regularly use" could have meant phone
10 calls or it could have meant any number of things you might do
11 with any of those devices, right?

12 **A.** That is correct.

13 **Q.** So, again, you did not try to ascertain for the friend
14 example, just to take it, what that respondent could have done
15 with that friend's device or for how long, right?

16 **A.** That is correct.

17 **Q.** And you didn't, for example, try to ascertain whether the
18 device was available -- was a personal device or a shared
19 device or whether it had any restrictions on it, for example?

20 **A.** That is correct.

21 **Q.** So if a shared device in the household even was available
22 to check emails, but not to sit down and play any games, you
23 can't ascertain that through your survey questions, right?

24 **A.** I agree.

25 **Q.** And that is because you just didn't care what respondents

1 were using their devices for, just that they had them
2 available for use, right?

3 **A.** Well, it is not that I don't care, it's that I was not
4 asked to investigate that.

5 **Q.** Okay. So you weren't asked, and you didn't do it.

6 **A.** I did not do that, correct.

7 **Q.** So your surveys do not answer the question of whether
8 someone's willingness to use a different device might depend
9 on the circumstances, correct?

10 **A.** That is correct.

11 **Q.** And your surveys did not assess what respondents would do
12 in response to any set of circumstances, correct?

13 **A.** Correct.

14 **Q.** All right. Are you aware -- did you listen to any of
15 Professor Lafontaine's testimony?

16 **A.** No, I did not.

17 **Q.** Okay. So you're not aware that Professor Lafontaine
18 testified that she understood your survey to address
19 consumers' access to and ownership of devices that support
20 game transactions?

21 **A.** I'm not aware of that.

22 **Q.** Okay. Your survey is about usage, not ownership,
23 according to you, right?

24 **A.** That is correct.

25 **Q.** You reminded me of that a couple of times during our

1 deposition together, right?

2 **A.** Probably.

3 **Q.** All right. So if Professor Lafontaine says that your
4 survey is about ownership, that is wrong, right?

5 **A.** That is not correct, yeah.

6 **Q.** You concluded that 81 percent -- these are not numbers
7 that were on your slides, but they are in your written
8 direct -- 81 percent of iOS App Store users and 94 percent
9 of the iOS *Fortnite* players had regularly used at least one
10 type of other electronic device not manufactured by Apple in
11 the last 12 months, right?

12 **A.** There is a lot packed in that question. 81 -- could you
13 repeat it? There's a lot of information there.

14 **Q.** Yes. I'll help you out.

15 Your written direct should be in your binder, and I'll
16 point you to paragraphs 16 and 17 when you can get there.

17 **A.** I'm there.

18 **Q.** Okay. So in those two bullets -- and I'm combining
19 them -- 81 percent of iOS App Store users and 94 percent of
20 iOS *Fortnite* players had regularly used at least one type of
21 other electronic device not manufactured by Apple in the last
22 12 months, right?

23 **A.** That is correct.

24 **MS. MOSKOWITZ:** Okay. So I'm going to ask for
25 PDX0003.3 to be put up on the screen here, please.

1 **BY MS. MOSKOWITZ:**

2 **Q.** So Professor Lafontaine, in her written direct and opening
3 report, again spoke about your surveys.

4 You've never seen those documents --

5 **THE COURT:** Ms. Moskowitz, can you slow down, please?

6 **MS. MOSKOWITZ:** Absolutely. Sorry, Your Honor.

7 **BY MS. MOSKOWITZ:**

8 **Q.** You have never seen either of those documents before,
9 right, Professor Lafontaine's written direct or her report?

10 **A.** That's correct, I have not seen these.

11 **Q.** Okay. And Professor Lafontaine, in her written direct,
12 says, "Most iPhones users have access to other devices."

13 Do you see that?

14 **A.** Yes.

15 **Q.** And in her report, that second bullet, she refers to the
16 same numbers I just referred to from your report, 81 percent
17 and 94 percent, right?

18 **A.** I see that.

19 **Q.** And the way she describes it, she says those individuals,
20 quote, regularly access non-iOS devices, et cetera.

21 Do you see that?

22 **A.** I do.

23 **Q.** All right. But when we look at your language that we just
24 saw in your written direct, you describe those numbers as
25 individuals who had regularly used in the last 12 months those

1 other devices, right?

2 A. Well, yes, because it's the last 12 months, yeah.

3 Q. Right. So it is not the current tense.

4 A. It's -- the current is included, but also the history,
5 yeah.

6 Q. Right. So it is not exclusively current.

7 A. Not necessarily, yeah.

8 Q. Okay. And you also didn't use the word "access" in your
9 survey, right?

10 A. I used the word "availability" --

11 Q. Right.

12 A. -- yeah.

13 Q. So she, Professor Lafontaine, dropped the "in the last 12
14 months" when she described your survey, right?

15 A. I'm just rereading that sentence.

16 Q. Yes.

17 A. That time window is dropped.

18 Q. And removing "the last 12 months" when you describe
19 "regularly use" leaves that term open to interpretation and
20 ambiguous, in your view, correct?

21 A. That, I would have to study. I'm not sure. I can't
22 really answer that question "yes" or "no."

23 Q. Okay. Do you remember answering it in your deposition?

24 A. No.

25 Q. Okay.

1 **MS. MOSKOWITZ:** Your Honor, I believe you should have
2 the transcript.

3 **THE COURT:** I do.

4 **MS. MOSKOWITZ:** It is Page 131, lines 20, through
5 132, line 8.

6 **THE COURT:** Okay. You just need to read the whole
7 answer.

8 **MS. MOSKOWITZ:** Yes, ma'am.

9 **BY MS. MOSKOWITZ:**

10 **Q.** Professor Hanssens, do you recall being asked the
11 following question and giving the following answer at your
12 deposition?

13 "Question: But if you just read someone saying that
14 they concluded that 81 percent of iOS App Store
15 users regularly use other devices, would you
16 understand that to mean in the last 12 months or
17 something other than that?

18 "Answer: The way that you have now framed this, I
19 would -- I would interpret that as being subject to
20 interpretation, you know. So what do you mean by
21 'regularly use,' okay? Today? Tomorrow? Last week?
22 Et cetera. So, yeah, the English is fine, but the
23 interpretation is more ambiguous than what I had used
24 in my definition."

25 Did I read that correctly?

1 **A.** Oh, I don't know, but I'll assume so.

2 **MS. MOSKOWITZ:** All right. I'm going to put up
3 another slide here. This is Slide 26 from Apple's opening
4 statement demonstratives. It should be .4 in our slides here.
5 Okay. So maybe I will come back to it.

6 **BY MS. MOSKOWITZ:**

7 **Q.** Were you -- did you listen in to the opening statements?

8 **A.** I am sorry, whose opening statement?

9 **Q.** Apple's.

10 **A.** No, I did not.

11 **Q.** Okay. So if they described your survey results as saying
12 that 95 percent of -- yes, here it is.

13 I'm looking at Slide .4 here, and the top here is Apple's
14 opening slide. It's a little tough to read, but it says:

15 "95 percent regularly used or could have regularly
16 used devices other than their iOS device."

17 Do you see that?

18 **A.** I do.

19 **Q.** So that left out the last 12 months, as well, right?

20 **A.** Well, it refers to the past, but it does not mention the
21 12 months.

22 **Q.** Right. And as we discussed, it does not include the fact
23 that there might be individuals who do not currently use or
24 access other devices, right?

25 **A.** That is a possibility.

1 Q. In Slide 5 of your demonstratives, you reported that
2 92 percent of iOS app survey respondents and 97 percent of
3 iOS *Fortnite* survey respondents regularly used other
4 electronic devices in the last 12 months, right?

5 A. Yes.

6 Q. Okay. And you also report in that same slide that
7 99 percent of both of those sets of respondents regularly used
8 other devices and had other electronic devices available for
9 regular use in the last 12 months, right?

10 A. It is an "or," regularly used or had it available. I
11 guess -- yeah, agreed.

12 Q. Okay. Those are the same percentages that you report in
13 the summary of your opinions in your written direct,
14 paragraph 1, Opinion 1 and 2.

15 Does that sound familiar?

16 A. My written direct?

17 Q. Yes.

18 A. I'm there.

19 Q. Okay. Did I accurately summarize what you said there?
20 That was a reference to that paragraph, right?

21 A. Yes, I see it. Yes, I agree.

22 Q. And all of those figures, the ones I just read out and the
23 ones that were in your Slide 5, actually include other
24 electronic devices that are still iOS devices, right?

25 A. I am sorry, I'm a little confused now. The other --

1 Q. The 92 percent --

2 A. Yeah.

3 Q. -- and the 97 percent and the 99 percent on both include
4 other electronic devices that are still manufactured by Apple.

5 A. Ah, that are still manufactured by Apple, yes.

6 Q. Right. Okay.

7 You also put up a Slide 6 about the percentage of survey
8 respondents -- *Fortnite* survey respondents that play digital
9 games on other electronic devices.

10 Do you recall that?

11 A. Yes. Where --

12 Q. Slide 6 of your demonstratives, which may be -- I think
13 you still have that binder if you need it.

14 There it is. It is on the screen.

15 That look familiar?

16 A. It does.

17 Q. Okay. So for -- just to be clear, you -- when you gave
18 the survey to individuals, on the gaming consoles in
19 particular, you didn't ask respondents whether they actually
20 used those devices to play games, right?

21 A. That's correct.

22 Q. Instead, you implicitly assumed that respondents who
23 regularly use a console use the device to play games.

24 A. Just one second.

25 If they regularly used the console and they are a *Fortnite*

1 player, right?

2 Q. They are an iOS *Fortnite* player through your screening.

3 A. Correct.

4 Q. Yes?

5 A. Correct, yeah.

6 Q. Okay.

7 A. Then I assume that they used the console for games, fine,
8 but that doesn't stick to other uses.

9 Q. Right. But you assume that they play games. You don't
10 know one way or the other whether they just used it to watch
11 Netflix, for example.

12 A. That's correct.

13 Q. Okay. And you are aware that, in fact, consoles can be
14 used to watch Netflix, for example.

15 A. So I'm told.

16 Q. So you cannot actually swear under oath that 94 percent of
17 all of those respondents actually played digital games on all
18 of the other devices included in your survey, correct?

19 A. I am sorry. Could you repeat that?

20 Q. We just established that some of the respondents of the --
21 using consoles may not have played games on those consoles.

22 You cannot tell me one way or the other whether they did,
23 correct?

24 A. Unlikely, but okay.

25 Q. Unlikely based on what? You didn't test that in your

1 survey, did you?

2 **A.** Well, look, it's -- I did not test it because these
3 consoles are designed specifically --

4 **Q.** Because you --

5 **A.** -- for game playing.

6 **Q.** -- assumed it, right?

7 **A.** I am sorry?

8 **Q.** You assumed it.

9 **A.** Yes.

10 **Q.** Okay. You didn't test it.

11 **A.** Correct.

12 **Q.** All right. So you can't tell me how many of that
13 94 percent did or did not play games on those other devices,
14 right?

15 **A.** But the question is about playing digital games --

16 **Q.** But you didn't ask playing digital games for all of the
17 individuals who used consoles. You didn't ask that question,
18 did you?

19 **A.** I am sorry. I'm confused about the breakdown here.

20 So it's those who report that they have a game console.
21 That's the subset now?

22 **Q.** Included in your 94 percent are individuals who had
23 regularly used or had available for regular use consoles.

24 **A.** That is correct.

25 **Q.** And you didn't ask that set of individuals what they use

1 those consoles for.

2 **A.** That is correct.

3 **Q.** So you can't tell me whether the portion of that
4 94 percent that were -- owned or used consoles actually played
5 games on those consoles.

6 **A.** Oh, okay. No, I don't know that.

7 **Q.** Okay. Let's talk about "regularly."

8 You understood -- I think you mentioned this on direct --
9 that one person could use regularly in the sense of daily,
10 others could use weekly, et cetera, right?

11 **A.** Correct.

12 **Q.** You agree that if a term is vague or ambiguous, it can
13 correct confusion or guessing among respondents, correct?

14 **A.** If a term is vague and ambiguous, it can do that, yes.

15 **Q.** And you agree that clarity problems can arise when not all
16 respondents interpret a question the same way, right?

17 **A.** Those can arise, yes.

18 **Q.** You agree that vague wording can introduce error into your
19 responses, right?

20 **A.** It can, yes.

21 **Q.** It is important to try to avoid error in responses, would
22 you agree?

23 **A.** I agree.

24 **Q.** And you were trying to do that in your survey?

25 **A.** I was.

1 Q. You asked respondents about the devices that they
2 regularly use.

3 We just talked about that, right?

4 A. I did.

5 Q. But you did not provide respondents a definition of
6 "regular use," right?

7 A. That is correct.

8 Q. And you left it up to the individual, as we just
9 discussed, to answer whether they thought it was regular or
10 not, right?

11 A. Yes.

12 Q. You recall one of your pretest participants indicated that
13 they, quote, thought regular use was vague, end quote, right?

14 A. In Question 1, I believe, yes.

15 Q. And they indicated that "regular use" could mean different
16 things for different devices, right?

17 A. That is correct.

18 Q. And you did not probe into pretest respondents'
19 interpretation of the word "regularly," right?

20 A. You mean respondent by respondent, probing what they mean?
21 That's -- those -- there are some of the respondents in the
22 pretest who spelled that out.

23 Q. Right.

24 A. And so that's kind of a partial yes, partial no.

25 Q. Okay. Well, so you had a set of questions for these

1 pretest interviews, right?

2 **A.** Yes.

3 **Q.** The interviewers asked these questions exactly as they
4 appeared, right?

5 **A.** That is correct.

6 **Q.** They were not allowed to go off script and ask any
7 follow-up questions, correct?

8 **A.** Probably not.

9 **Q.** No, definitely not, right?

10 **A.** Well, I listened in, and in all conversations, sometimes
11 something needs to be repeated or something like that. So
12 there is some ambiguity there. But let's say in principle,
13 no.

14 **Q.** Other than repeating a question if someone glitched on the
15 Zoom, they were -- those interviewers were sticking to the
16 script, correct?

17 **A.** I agree with that.

18 **Q.** Let's take a look at a slide here that we put together
19 which has a set of respondents from your pretest results for
20 the iOS app survey.

21 Can you read -- I definitely don't think you can read the
22 left, but we have pulled out some on the right. Can you read
23 what is on the right?

24 **A.** Yes, if you give me a minute.

25 **Q.** I am just making sure you can see the words, not that you

1 have to read it all.

2 **A.** Okay.

3 **Q.** In your survey pretest, you asked, "Did you have any
4 problems understanding what is meant by the phrase 'regularly
5 used'?" right?

6 **A.** Yes.

7 **Q.** And do you recall that five out of six respondents
8 described regular use in terms of frequency of use?

9 **A.** Yes.

10 **Q.** And they actually gave varying frequencies, right?

11 **A.** Varying frequencies, yes.

12 **Q.** And so you do not know how often respondents were using
13 the devices and considering that usage regular, right?

14 **A.** That is correct.

15 **Q.** And you agree that an individual who does not use gaming
16 consoles, for example, except once a year they use the Xbox
17 when their family comes to visit, that could be regular use,
18 right?

19 **A.** I'm sorry. Are you saying that could be regular use?

20 **Q.** Could be.

21 **A.** I would say unlikely, but technically or theoretically
22 possible.

23 **Q.** It could be regular, right? It is up to the respondent,
24 right?

25 **A.** You said once a year, right?

1 Q. Yes.

2 A. And my window is 12 months, so it would be once.

3 Q. And it would be regular use, correct?

4 A. I'm just going to say unlikely, but possible.

5 Q. It's a repetitive activity, so you would leave it up to
6 that individual to answer if that is regular or not, right?

7 A. That is correct.

8 Q. Okay. And you don't know, from looking at your responses,
9 whether someone within those respondents considered a
10 once-a-year device to be regular use, right?

11 A. Well, that -- see, that is why I said unlikely, because if
12 the window is --

13 Q. You don't know it, sir, right? You can't tell from your
14 respondents, right?

15 A. So I am going to answer your question. It is --

16 Q. No, you're going to -- I am just -- I'm asking --

17 THE COURT: So the way this works -- have you ever
18 testified in court?

19 THE WITNESS: Yes.

20 THE COURT: Okay. She gets to ask her question; you
21 need to answer her question.

22 THE WITNESS: Yeah, okay.

23 THE COURT: Your attorney will get up and let you
24 expand. It is --

25 THE WITNESS: Okay.

1 **THE COURT:** -- not as if I'm new to this process
2 either.

3 Go ahead.

4 **BY MS. MOSKOWITZ:**

5 **Q.** You do not know, from looking at your responses that you
6 got, whether someone considered a once-a-year device to be
7 regular use, correct?

8 **A.** Okay. Okay. I mean correct.

9 **Q.** Correct.

10 We talked about the example that you provided for
11 "available to use" a little bit, including the friend, right?

12 **A.** Yes.

13 **Q.** And you did not ask in your pretest a specific question as
14 to whether respondents thought the term "available to use" was
15 clear, right?

16 **A.** I would have to take a look at the exact pretest
17 questions. If there was a problem, they certainly could have
18 stated it. But I may not have asked it specifically.

19 **Q.** You did not ask it specifically, correct?

20 **A.** Okay. Yes.

21 **Q.** You also did not ask respondents in your pretest if they
22 thought the example you provided for "available to use" was
23 clear, correct?

24 **A.** That is correct.

25 **Q.** And in response to the general question of whether any of

1 the questions were unclear, one respondent did, in fact,
2 indicate that they thought "available to use" was vague,
3 right?

4 **A.** One said that, yes.

5 **Q.** And you agree, again, just so we are clear, "available
6 to" -- "available to regularly use" includes devices that an
7 individual has never used, right?

8 **A.** I am sorry. I lost you on the question. Can you repeat,
9 please?

10 **Q.** Sure. You agree that "available to regularly use"
11 includes devices that the individual has never used.

12 **A.** That is, of course, a possibility.

13 **Q.** And, for example, an old model of a phone sitting in a
14 desk drawer that is not used would qualify as available,
15 right?

16 **A.** If the phone works, then yes.

17 **Q.** You agree that the quality of respondents' answers depend
18 on their understanding of the survey questions, right?

19 **A.** I do.

20 **Q.** And if a pretest reveals that respondents do not
21 understand a question, you, as the survey designer, need to
22 resolve that problem, right?

23 **A.** I agree.

24 **Q.** And it's your opinion that surveys should be revised if
25 pretest respondents do not understand a question, right?

1 **A.** Among other reasons, yes.

2 **Q.** And it would be a highly unusual occurrence where a survey
3 does not need to be revised if pretest respondents do not
4 understand the questions being asked, correct?

5 **A.** That seems fair.

6 **Q.** You did not revise your questionnaire at all based on any
7 of your pretest responses, correct?

8 **A.** That is correct.

9 **Q.** You asked respondents in the screening questions to
10 identify the operating systems of the smartphones or tablets
11 that they had used in the last 12 months, correct?

12 **A.** Yes.

13 **Q.** And you included three smartphone and tablet operating
14 systems as options: Apple iOS, Android, and Microsoft
15 Windows, right?

16 **A.** I did.

17 **Q.** You didn't do -- well, let's just take a step back.

18 You didn't do any focus groups or qualitative research
19 before you started designing your survey, right?

20 **A.** No focus groups, that is right.

21 **Q.** And so you didn't do any interviews or focus groups to try
22 to understand how people think about or talk about issues that
23 you were going to be presenting in your survey, right?

24 **A.** That's fair.

25 **Q.** And so you did not explore, before drafting your survey,

1 whether people think about devices that they use in terms of
2 the operating system, for example.

3 A. That's fair.

4 Q. Professor Rossi did do qualitative research, by the way,
5 right?

6 A. He did -- there was a phase before the survey, yes.

7 Q. Right. Qualitative research, focus group, that type of
8 thing.

9 A. That sort of thing, yes.

10 Q. You skipped that step-in part because you believe that
11 people understand the difference between a computer, a
12 smartphone, and a tablet, right?

13 A. I do.

14 Q. But you, yourself, don't know whether a Microsoft Surface
15 is a tablet or a laptop, even though you used to have one,
16 right?

17 A. I believe it's both, but...

18 Q. You couldn't decide which bucket that fell in, right?

19 A. Well, it's both. But -- it was.

20 Q. Okay. So in terms of -- if you were taking the survey,
21 you wouldn't really -- you would just click both boxes?

22 A. I am sorry, click what?

23 Q. If you were taking your own survey and you had a Microsoft
24 Surface, you would have clicked both for tablet and for PC?

25 A. For tablet and for laptop --

1 Q. Okay.

2 A. -- yes.

3 Q. You would check both?

4 A. Yes.

5 Q. Okay. So you found -- let's talk about your results for a
6 second.

7 MS. MOSKOWITZ: And I think I have a demonstrative
8 for this, as well, .7.

9 (Displayed on screen.)

10 BY MS. MOSKOWITZ:

11 Q. You found that 13 percent of iOS App Store users and
12 19 percent of the iOS *Fortnite* players regularly used a
13 Microsoft Windows smartphone in the last 12 months, correct?

14 A. That is correct.

15 Q. And when you add in the respondents who indicated that
16 they had available to regularly use a Microsoft Windows
17 smartphone, those percentages went up to 30 and 43 percent
18 respectively, correct?

19 A. Yes.

20 Q. And I think -- I wrote it down, but I can't find my
21 note -- I think you said that was somewhat surprising.

22 Is that the words you used in direct?

23 A. That is possible. That struck me as high, yes.

24 Q. Yeah. It strikes you as high, right?

25 A. Yeah.

1 Q. All right. And that is based on what you know about the
2 real world, right?

3 A. Just based on the fact that Microsoft has a small market
4 share in smartphones.

5 Q. All right. You know that Microsoft Windows smartphones
6 are no longer being sold, right?

7 A. The Microsoft are being sold, but not --

8 Q. Microsoft Windows --

9 A. Oh, Windows. I'm sorry.

10 Q. -- smartphones are no longer being sold, correct?

11 A. My mistake. Yes.

12 Q. Okay. And you are aware that the Microsoft Windows
13 smartphones are no longer even being serviced, right?

14 A. I am -- so I'm told, yeah.

15 Q. And you are aware that as of 2018, Microsoft Windows
16 smartphones' market share was 0.15 percent?

17 A. I'm told that, yes.

18 Q. Ah, I found my note. "Somewhat surprising." I got it
19 right. Yes? You said that was somewhat surprising, these
20 results?

21 A. Yes.

22 Q. Okay. So you got those results from your survey and you
23 looked at them, right?

24 A. I did.

25 Q. All right. But you didn't do any comparison of any of

1 your results in terms of what operating systems people had
2 said they used or had available to use against any external
3 benchmarks for other devices, right?

4 **A.** That is correct.

5 **Q.** All right. And in your opening report, you didn't do
6 anything to address these Microsoft Windows smartphones
7 results, right?

8 **A.** That is correct.

9 **Q.** You -- didn't concern you at all to see these results.

10 **A.** Well, but -- no, I did not do anything.

11 **Q.** All right. You didn't acknowledge that there was anything
12 even somewhat surprising about these results when you wrote
13 your original opening report, right?

14 **A.** That is not mentioned in the original report.

15 **Q.** And you didn't look at Apple's own data to see if they had
16 any information that would say that your results had no basis
17 in reality, right?

18 **A.** That is correct.

19 **Q.** So you -- Professor Mathiowetz pointed this out to you in
20 her rebuttal report, right?

21 **A.** She did.

22 **Q.** All right. And so that is when you then took a look at
23 this, right?

24 **A.** Yes.

25 **Q.** And the only thing that you did in your written direct

1 testimony to address this issue was a sensitivity analysis
2 that you described on direct?

3 **A.** Yes.

4 **Q.** And by that, we mean -- you mean you excluded all of the
5 respondents who indicated that they regularly used or could
6 have regularly used smartphones operating by a Windows
7 Microsoft operating system, right?

8 **A.** That is correct.

9 **Q.** And that, again, was done after Professor Mathiowetz
10 critiqued your results, right?

11 **A.** Yes.

12 **Q.** And so this sensitivity analysis or robustness check -- I
13 think I've seen both terms used; is that fair?

14 **A.** That is correct.

15 **Q.** All right. What you did was to eliminate every single
16 respondent from your results who indicated Microsoft Windows
17 operating system.

18 **A.** For smartphones?

19 **Q.** Yes.

20 **A.** Yes.

21 **Q.** Okay. So in the iOS app survey, that was 30 percent of
22 all of the respondents, right?

23 **A.** Just one second, please. On the availability criteria,
24 yes.

25 **Q.** You excluded all 30 percent in your sensitivity analysis,

1 right?

2 **A.** That one, yes.

3 **Q.** Okay. And for *Fortnite*, you excluded all 43 percent of
4 those respondents who indicated that, right?

5 **A.** That's correct.

6 **Q.** So just to do the numbers, your total number of
7 respondents to begin with for the iOS app survey was 500,
8 right?

9 **A.** Yes.

10 **Q.** So you eliminated 151 of those 500 respondents in this
11 analysis?

12 **A.** In the bottom right scenario, yes.

13 **Q.** In the top right?

14 **A.** Oh, the top right. I am sorry.

15 **Q.** Yes.

16 **A.** I wasn't following you. Yes.

17 **Q.** All right. So for the iOS app survey, you removed 151
18 of your 500 respondents, right?

19 **A.** Yes.

20 **Q.** And for your iOS *Fortnite* survey, that started with 490,
21 right?

22 **A.** Yes.

23 **Q.** And so you removed 211 of the 490.

24 **A.** Yes.

25 **Q.** You can't rule out the possibility that some or all of the

1 remaining 349 iOS app survey respondents or the 279 iOS
2 *Fortnite* survey respondents were confused or unsure with
3 respect to these questions in the survey, right?

4 **A.** That is a long question. Let me think about this for a
5 minute.

6 **Q.** Okay.

7 **A.** On that subset of people --

8 **Q.** Let me try a different question.

9 **A.** Yeah, because --

10 **Q.** Okay.

11 **A.** Yeah.

12 **Q.** You kicked those people out of your results for this
13 analysis, right?

14 **A.** For this robustness check, yes.

15 **Q.** But you can't tell me that the people you left in
16 understood those questions, right?

17 **A.** But I cannot assume that of any question -- you can never
18 assume that of any question or answer of any question in any
19 survey.

20 **Q.** Okay.

21 **A.** It is all self-report.

22 **Q.** All right. Let's talk about -- a little bit about -- I
23 think I have a few minutes -- about Professor Rossi's survey
24 that you critiqued.

25 You critiqued Professor Rossi's use of a hypothetical,

1 right?

2 **A.** The way he executed it, yes.

3 **Q.** You agree that hypotheticals are regularly used in survey
4 research, right?

5 **A.** They are --

6 **Q.** And you, yourself --

7 **A.** -- regularly used, yes.

8 **Q.** And you, yourself, have used hypotheticals in your -- in
9 surveys, right?

10 **A.** Yes.

11 **Q.** And hypotheticals are appropriate when they are an
12 inherent part of the survey, right?

13 **A.** Well, that's a rather vague term, but let me go along with
14 it. Fine.

15 **Q.** Yeah, I'm actually using your own words --

16 **A.** Okay.

17 **Q.** -- so I wouldn't have asked it that way, but I tried to
18 use your words.

19 Agree?

20 **A.** Okay. That's -- then I agree.

21 **Q.** Okay. Professor Rossi did a couple of external benchmark
22 checks.

23 Do you recall that?

24 **A.** Yes.

25 **Q.** We discussed those at your deposition?

1 **A.** Yes.

2 **Q.** I'm going to take a flier and see if maybe I can get you
3 to just agree to the punchline, and I don't know if you will.

4 You agree that Professor Rossi used the RVC data that he
5 used at the appropriate time in his survey process, right?

6 He compared it to the right population?

7 **A.** What was the last thing you said?

8 **Q.** He compared it to the right population?

9 **A.** I can't really recall that. I am sorry. The population
10 part. I clearly recall that test --

11 **Q.** Okay.

12 **A.** -- but I can't recall, as I sit here, what exactly that
13 population was.

14 **Q.** All right. Let me try.

15 So you critiqued it in your written direct by saying that
16 it didn't reflect the relevant target population because it
17 wasn't limited to the people who made at-issue purchases; it
18 was only limited to the iPhone users, right?

19 **A.** If that is what it is, then fine, yes.

20 **Q.** I am referring to your --

21 **A.** I don't recall exactly.

22 **Q.** -- critique, sir.

23 **A.** Yeah, I understand, but I cannot recall the --

24 **THE COURT:** That's fine.

25 Can you give me a paragraph number? And let him finish

1 his answer, please.

2 **MS. MOSKOWITZ:** Sure. This is paragraph 59A. Just
3 setting the table.

4 **THE COURT:** All right. Proceed, but let him finish.

5 **MS. MOSKOWITZ:** Yep.

6 **BY MS. MOSKOWITZ:**

7 **Q.** 59A. Are you there?

8 **A.** Yeah, I'm there.

9 **Q.** Oh, okay. So that's your critique?

10 **A.** Yes, I see it.

11 **Q.** Okay. And so the RVC data was not limited to at-issue
12 purchases, right?

13 **A.** That is correct.

14 **Q.** So Professor Rossi was correct not to compare his final
15 sample of at-issue purchasers against the RVC data, right?

16 **A.** I'm not following you here, because --

17 **Q.** All right. It's okay. I'll move on.

18 **A.** Okay.

19 **Q.** Apple transactional data.

20 You critiqued Professor Rossi's benchmark against Apple's
21 own transactional data?

22 **A.** Is that in the same paragraph there or --

23 **Q.** Do you recall doing this?

24 **A.** I need a little help here --

25 **Q.** All right.

1 **A.** -- on the transactional data.

2 **Q.** That's okay. If you are not focused on it, we can do one
3 other thing and then I can sit down.

4 You talked about Professor Rossi's questions that you said
5 in your Figure 9 corroborate your results.

6 Do you remember that?

7 **A.** Oh, yes.

8 **Q.** Okay. And Professor Rossi collected that data in a set of
9 screener questions, right?

10 **A.** That is correct.

11 **Q.** And he didn't use the word "regular" and he didn't use "in
12 the last 12 months," right?

13 **A.** Correct.

14 **Q.** And Professor Rossi wasn't generating any point estimates
15 from those results, right?

16 **A.** Well, he does have percentages. Those are point
17 estimates.

18 **Q.** Well, you calculated the percentages, actually, didn't
19 you?

20 **A.** Yes, I did.

21 **Q.** Or did someone do that for you?

22 **A.** Well, that was done as -- in the regular preparation, but
23 yes. Okay. I did that, I agree.

24 **Q.** Okay. So Professor Rossi didn't report any point
25 estimates on this, correct?

1 **A.** Not that I recall.

2 **Q.** All right.

3 **MS. MOSKOWITZ:** Your Honor, I will pass the witness.

4 **THE COURT:** Redirect.

5 **REDIRECT EXAMINATION**

6 **BY MS. MOYE:**

7 **Q.** Now, Professor Hanssens, you were asked about whether it
8 was proper to do hypothetical questions in a survey.

9 You recall that line of questioning?

10 **A.** I do.

11 **Q.** And, sir, was there something different about Professor
12 Rossi's use of hypothetical that caused you concern?

13 **A.** Something different from what? I am sorry.

14 **Q.** Well, the question you were asked was, is there a general
15 problem with using hypotheticals.

16 Do you remember that?

17 **A.** Yes.

18 **Q.** And did Professor Rossi, in your opinion, take the
19 appropriate approach to using a hypothetical question in his
20 survey?

21 **A.** I see. Okay.

22 Well, no. I have already pointed out some specific
23 problems that I see with it.

24 **Q.** Is it important, in doing a hypothetical question, that
25 you actually do a pretest, Professor Hanssens?

1 **A.** Yes.

2 **Q.** And did Professor Rossi do a pretest of his
3 backward-looking hypothetical price increase scenario survey
4 question?

5 **A.** He did not.

6 **Q.** And we talked earlier about an assessment that you did as
7 to whether that forward-looking to backward-looking change had
8 made an impact.

9 Do you recall that?

10 **A.** I recall that.

11 **Q.** And what was your conclusion based on that?

12 **A.** Well, the main result is that the percent of the people
13 who -- I am sorry, this is on the forward versus backward --
14 is that it created more uncertainty around the question
15 because the number of people who say "I don't know" jumps from
16 4 to 10 percent as a result of that change.

17 **Q.** Okay. And let's talk about Microsoft. You were asked a
18 lot of questions about the Microsoft questions in your survey.

19 Do you remember that?

20 **A.** I do.

21 **Q.** And did you do an assessment to determine whether any
22 possibility of confusion about the Microsoft Windows
23 smartphone had impacted your results?

24 **A.** I did do that, yes.

25 **Q.** And what did you conclude as a result of that assessment?

1 **A.** That my conclusions remain the same.

2 **Q.** And you were asked about a specific type of Microsoft
3 Windows phone.

4 Do you remember that?

5 **A.** Yes.

6 **Q.** Are you aware of whether or not Microsoft now has a
7 smartphone on the market?

8 **A.** They have one on the market, or at least one.

9 **Q.** So is it possible that those survey respondents could be
10 referring to this different Microsoft smartphone that is on
11 the market?

12 **MS. MOSKOWITZ:** Objection.

13 **THE COURT:** Overruled.

14 **BY MS. MOYE:**

15 **Q.** You can answer, sir.

16 **A.** Yes, that's quite possible.

17 **Q.** Nevertheless, you did an assessment where you took out
18 those who referred to this different model of Microsoft phone;
19 is that correct?

20 **A.** I did.

21 **Q.** Thank you, sir.

22 And let's talk about ambiguity. I'm going to try to get
23 the word out right. And you were asked some questions about
24 whether "regularly used" was ambiguous.

25 You recall that line of questioning?

1 **A.** I do.

2 **Q.** And, sir, is it your opinion that "regularly used" is
3 ambiguous in the context of your survey?

4 **A.** It is not.

5 **Q.** Could you tell us or describe for us again why you decided
6 not to include a definition of "regularly used" in your
7 survey?

8 **A.** Well, there are two reasons for that.

9 First, because that is a very common English language
10 term; and, secondly, because I precisely wanted people to use
11 interpretives for what is relevant to them for a particular
12 device.

13 So if they use their smartphone daily but they use their
14 laptop only weekly, that is totally fine by me. I recognize
15 that. I did not want to impose a certain frequency cycle on
16 them, so I let them interpret it.

17 And I'm really only after identifying the device that they
18 associate with regular use, and that regular use could be
19 daily, weekly, monthly. Those are all acceptable.

20 **Q.** Thank you, sir.

21 And you were asked about frequency of use.

22 **A.** Yes.

23 **Q.** Would it, in your opinion, Professor Hanssens, have been
24 appropriate for you to define "regular use" with reference to
25 a specific frequency of use in your survey?

1 **A.** No.

2 **Q.** And can you explain why not?

3 **A.** Well, that is related to what I said a minute ago, that if
4 you device -- I am sorry. If you allow me to make an example.
5 I drink coffee regularly and I go to a certain dentist's
6 office four times a year. Those are both regular, even though
7 their frequencies are totally different.

8 And so I specifically wanted respondents to respond in a
9 way that is relevant for them, not listening to some
10 instruction from me or any other researcher that says it must
11 be daily or it must be weekly.

12 **Q.** Let me go back to Microsoft for a moment and ask, once you
13 excluded the respondents that referred to this particular
14 brand of Microsoft phone, was the sample size still
15 representative?

16 **A.** It was still sufficient for me to draw an inference, yes.

17 **Q.** So you had no problems with the size of the sample once
18 those respondents were eliminated?

19 **A.** No, that is correct.

20 **Q.** You were asked a lot of questions about whether you asked
21 respondents who said they have game consoles whether they play
22 games on their game consoles.

23 Do you remember that line of questioning?

24 **A.** I do remember that, yes.

25 **Q.** And can you explain to the Court why you didn't feel it

1 necessary to ask those who had game consoles whether they play
2 games on their game consoles?

3 **A.** Well, that's because these consoles are designed for
4 playing games, and I didn't want to cause, you know, confusion
5 by asking sort of the obvious, since I do ask about other
6 devices. So it's just because these consoles are specifically
7 designed for game playing.

8 **Q.** And you were asked a question -- and I think there was a
9 reference made to your written direct -- about whether you
10 included iOS devices in your definition of "other electronic
11 devices," and I think there may have just been some confusion
12 on counsel's part.

13 So can we just turn to your written direct really
14 quickly --

15 **A.** Sure.

16 **Q.** -- and have you explain to the Court what was included in
17 your definition of "other electronic devices."

18 Look at page 2, Footnote 2. And can you tell us, what is
19 the definition of "other electronic devices" in your written
20 direct?

21 **A.** Yes. If you don't mind, I will just refer to Footnote 2.
22 It's smartphones and tablets other than iOS, and then it's
23 computers, gaming consoles, and handhelds.

24 **Q.** Thank you, sir.

25 So it did include computers manufactured by Apple; is that

1 correct?

2 **A.** Oh, it does, yes.

3 **Q.** But it did not include other iOS devices; is that right?

4 **A.** That's correct.

5 **Q.** Thank you.

6 You were asked a series of questions about
7 Dr. Lafontaine's testimony. And you were asked, I think,
8 specifically whether you could determine whether one sentence
9 in her testimony was ambiguous as a result of leaving out the
10 phrase "last 12 months."

11 Do you remember that?

12 **A.** I do remember that.

13 **Q.** And, sir, have you reviewed Dr. Lafontaine's testimony?

14 **A.** I have not.

15 **Q.** Have you reviewed her written direct?

16 **A.** I have not.

17 **Q.** Have you reviewed her deposition testimony?

18 **A.** No.

19 **Q.** Do you feel that you are in a position to determine
20 whether one sentence in her testimony, her written direct, or
21 her deposition was ambiguous because three words were left
22 out?

23 **MS. MOSKOWITZ:** Objection.

24 **THE WITNESS:** I am not in that position.

25 **THE COURT:** The objection is overruled.

1 **BY MS. MOYE:**

2 **Q.** You were also asked whether you had spoken to Apple's
3 other experts before you did your survey work.

4 Do you remember that?

5 **A.** Yes.

6 **Q.** And, specifically, I think you were asked about
7 Dr. Lafontaine.

8 **A.** Yes.

9 **Q.** Is there a possibility that in speaking to another about
10 the outcome, you could influence the design of a survey?

11 **A.** Is there a possibility?

12 **Q.** Let me ask it a different way.

13 **A.** Yeah.

14 **Q.** Do you believe it would have been appropriate for you to
15 speak to Dr. Lafontaine or Apple's other experts to determine
16 how they may use your data before doing your survey work?

17 **A.** No, that would not be appropriate.

18 **Q.** And why is that not appropriate, sir?

19 **A.** Well, because I -- what I need to do and have done is do
20 an independent survey, with the emphasis on independence. I'm
21 listening to the task. A certain task is given. If I feel
22 competent to execute on that task, I accept the engagement,
23 but I have no external influences on the subsequent use of
24 that work.

25 **Q.** Thank you, sir.

1 And you were asked a series of questions about
2 substitutions and whether you did substitutability analysis.

3 Do you remember that?

4 **A.** I do.

5 **Q.** And, sir, do you believe your survey results are relevant
6 to an assessment of whether consumers can substitute between
7 devices?

8 **A.** Yes, my results are.

9 **Q.** And can you explain why?

10 **A.** That's because of the availability question.

11 **MS. MOSKOWITZ:** Objection.

12 **THE WITNESS:** May I --

13 **THE COURT:** Hold on.

14 **THE WITNESS:** I'm sorry.

15 **THE COURT:** What is the objection?

16 **MS. MOSKOWITZ:** Foundation, given what he said on
17 cross and just now.

18 **THE COURT:** Is this in his report?

19 **MS. MOYE:** Yes, it is, Your Honor.

20 **THE COURT:** Overruled.

21 **MS. MOSKOWITZ:** Your Honor, it is not. He does not
22 discuss substitution at all. The word does not appear, and he
23 just testified on cross he didn't do it and it's not useful
24 for that.

25 **THE COURT:** Okay.

1 **MS. MOYE:** The question --

2 **THE COURT:** Give me a paragraph.

3 **MS. MOYE:** I am sorry?

4 **THE COURT:** Give me a paragraph in his report if he
5 has already opined on this.

6 **MS. MOYE:** I will move on. I'll rephrase the
7 question.

8 **THE COURT:** All right.

9 **BY MS. MOYE:**

10 **Q.** Did your survey determine whether consumers had other
11 devices that they regularly used?

12 **A.** Yes.

13 **Q.** Is regular use of a device relevant at all to whether a
14 consumer could substitute for that device?

15 **MS. MOSKOWITZ:** Objection.

16 **THE COURT:** Yeah, if he doesn't use the word
17 "substitution," it is what it is, and the Court will evaluate
18 the data and determine whether or not it has any impact.

19 **MS. MOYE:** Yes, Your Honor. I believe he did, but we
20 won't take the time to find it now because I don't have the
21 paragraph in front of me.

22 **BY MS. MOYE:**

23 **Q.** You were also asked about whether you were an expert in
24 general surveys versus marketing surveys.

25 Do you remember that?

1 **A.** I think the question was about general.

2 **Q.** Yes.

3 And what is the difference between a general survey versus
4 a marketing survey?

5 **A.** The difference is the area of application. So, for
6 example, let's say designing surveys on employee satisfaction
7 in a company. That would be in the field of human resource
8 management, which is different from marketing, and so that
9 would be outside my expertise.

10 But if it is a marketing issue, then I feel totally
11 confident doing survey work in that area.

12 **Q.** And what kind of survey work were you doing here, general
13 survey work or marketing survey work?

14 **A.** Definitely marketing.

15 **MS. MOYE:** Thank you, Your Honor. Pass the witness.

16 **THE COURT:** Recross.

17 **RECROSS-EXAMINATION**

18 **BY MS. MOSKOWITZ:**

19 **Q.** Professor Hanssens, you do not use the word "substitute"
20 anywhere in your survey, correct?

21 **A.** In the survey?

22 **Q.** Correct.

23 **A.** No, I don't think so.

24 **Q.** And you don't use it anywhere -- anywhere -- in your
25 written direct, correct?

1 **A.** Best -- to the best of my knowledge or my recollection,
2 no.

3 **Q.** It's -- sorry. "No" meaning I am right, that the word
4 "substitute" or "substitution" is not used in your written
5 direct?

6 **A.** To the best of my recollection, you're right.

7 **Q.** And I just want to understand, is it your testimony that
8 it is not part of your job as a survey designer to have any
9 understanding as to how it might be used so that you can
10 understand if you are asking the right question?

11 **A.** No, I don't need to know that.

12 **Q.** Okay. So let's just talk very briefly about the Microsoft
13 results.

14 You said -- you were asked whether you did an assessment
15 to see if the Microsoft results indicated possible confusion.

16 You remember that question on redirect?

17 **A.** Well, I'm not sure if it is confusion, but it may be that
18 some of the answers were inaccurate for some reasons that
19 we've discussed.

20 **Q.** All right. But just so we are on the same page, the only
21 assessment you did in any way, shape, or form was to remove
22 all of the respondents who did indicate Microsoft Windows,
23 right?

24 **A.** Correct.

25 **Q.** That is the assessment you did.

1 **A.** That is the assessment.

2 **Q.** You didn't actually assess anything about the
3 understanding of the remaining respondents, correct?

4 **A.** That is correct.

5 **Q.** Okay. And, again, your survey showed 30 to 43 percent of
6 Microsoft Windows operating system smartphone availability or
7 use, right?

8 **A.** I am sorry, that was a long statement. Could you repeat
9 that, please?

10 **Q.** Your survey showed between 30 and 43 percent across the
11 two surveys use or access to Microsoft Windows smartphones?

12 **A.** Yes.

13 **Q.** And you -- remember we talked about this -- the actual
14 market share three years before your survey was done was 0.15
15 percent.

16 **A.** That is my understanding.

17 **Q.** And you really think that removing people who, on the
18 order of 30 to 43 percent, thought that they regularly used or
19 had access to those phones was going to be sufficient to solve
20 the problems?

21 **A.** Yes.

22 **MS. MOSKOWITZ:** No further questions, Your Honor.

23 **THE COURT:** Any redirect on those three topics?

24 **MS. MOYE:** No questions, Your Honor.

25 **THE COURT:** All right. Professor, you are excused.

1 Thank you very much.

2 **THE WITNESS:** Thank you.

3 **THE COURT:** Next witness.

4 **MR. DOREN:** Your Honor, Apple calls James
5 Malackowitz -- sorry, Malokowski. My apologies, Your Honor.

6 Your Honor, while we are waiting, I just wanted to note
7 for the record that Mr. Schiller has been here all week, as
8 well, though Your Honor's comfort with his presence I think
9 has led to him being overlooked in the morning greetings.

10 **THE COURT:** Good morning, Mr. Schiller. I am sorry
11 about that. I'm trying to remember the lawyers' names.

12 Ms. Moskowitz, can you get the binders? Do you have
13 binders up here?

14 **MS. MOSKOWITZ:** I will retrieve.

15 **THE COURT:** Good morning. If you will take the stand
16 and just remain standing.

17 (**JAMES EDWARD MALACKOWSKI**, called as a witness for the
18 Defendant, having been duly sworn, testified as follows:)

19 **THE WITNESS:** I do.

20 **THE CLERK:** Please be seated. And then if you will
21 be sure that microphone is underneath the shield, and then
22 please state your full name and spell your last name.

23 **THE WITNESS:** James Edward Malackowski,
24 M-A-L-A-C-K-O-W-S-K-I.

25 **MR. DOREN:** Your Honor?

1 **THE COURT:** Mr. Doren, you may proceed.

2 I was just looking at your name. My college roommate was
3 Churnikowski (phonetic).

4 **THE WITNESS:** Ah.

5 **MR. DOREN:** Thank you, Your Honor.

6 **DIRECT EXAMINATION**

7 **BY MR. DOREN:**

8 **Q.** Good morning, Mr. Malackowski.

9 **A.** Good morning, sir.

10 **Q.** Where are you currently employed?

11 **A.** I'm the chief executive of Ocean Tomo, LLC, headquartered
12 in Chicago.

13 **Q.** Thank you, sir.

14 And for initial purposes, could I ask you to look to the
15 binder I just handed you under the tab which refers to your
16 written direct testimony.

17 And is this written direct testimony that you wrote, sir?

18 **A.** It is.

19 **Q.** And is it true and accurate?

20 **A.** It is.

21 **Q.** And are there any changes that you would like to make to
22 that testimony here this morning?

23 **A.** No, sir.

24 **MR. DOREN:** Your Honor, I would move to admit, on the
25 same conditions as all other expert written directs,

1 Mr. Malackowski's written direct testimony.

2 **THE COURT:** Who is doing cross?

3 **MS. MOSKOWITZ:** Oh, I am sorry. It is Ms. Moskowitz.

4 No objection, Your Honor.

5 **THE COURT:** And no objection to the four exhibits on
6 Docket 684?

7 **MS. MOSKOWITZ:** That's right, Your Honor. We
8 reserved -- we handled what we needed to handle on
9 reservations there.

10 **THE COURT:** Okay. So those are admitted.

11 **MR. DOREN:** Thank you, Your Honor.

12 **BY MR. DOREN:**

13 **Q.** Mr. Malackowski, can you please tell us the professional
14 path that brought you to your current position?

15 **A.** Yes, sir.

16 So following undergraduate business program, I went to
17 Chicago and worked for a consultancy that was focused on
18 litigation damages. And it was right after the Federal
19 Circuit was created, so I began to focus on patent damages.

20 After about three years, I saw an opportunity to move into
21 patent intellectual property valuation more broadly, as well
22 as strategy, so I actually started at age 25 what was the
23 country's first intellectual property dispute accounting and
24 valuation boutique. We were fortunate. We grew to just under
25 300 before we sold it.

1 I then moved into the private equity and venture capital
2 industry, learning how intellectual property drives value in
3 business. And then 18 years ago, I started Ocean Tomo.

4 **Q.** Thank you, sir.

5 And have you prepared some demonstratives for use here
6 today?

7 **A.** Yes, sir.

8 **MR. DOREN:** And if we can put those up, please.

9 **BY MR. DOREN:**

10 **Q.** And looking at slide number 2, can you please provide the
11 Court with some additional information about some of your
12 professional activities.

13 **A.** Yes. So Ocean Tomo we just referred to. Today, we have
14 about 65 professionals focused on IP valuation, IP strategy,
15 and investment banking.

16 Outside of my employment, I'm very active in the
17 professional industry, a group called LES, which you've
18 probably never heard of, but it is the world's largest
19 technology transfer professional association. And I'm in a
20 number of leadership roles there.

21 With respect to my fiduciary positions, I have been an
22 active and numerous board member for a number of companies,
23 the most well known being Ford's intellectual property
24 management business, Ford Global Technologies. I was the
25 independent director where we managed all of the IP for Ford,

1 Jaguar, Volvo, Aston Martin, Mazda, all of the related
2 entities at that time.

3 Academically, I enjoy teaching, and so I teach at my alma
4 mater and work with their venture and innovation community,
5 but I have taught at a number of programs across the country.

6 And then, lastly, I hold a number of certifications. I'm
7 an accountant by training, so I am a CPA, but as relevant to
8 the issues here, I am also a certified licensing professional,
9 which is a CLP.

10 **Q.** And can you tell us a little bit more, please, about what
11 area of licensing is the focal point of the certified
12 licensing professional designation?

13 **A.** Yes.

14 The CLP designation reflects the area of technology
15 transfer and intellectual property transfer, largely through
16 license. It is based upon a skill set related to valuation,
17 business law, contracts.

18 **Q.** Thank you, sir.

19 And if you would please take a look at -- in your binder
20 at DX4876.

21 And do you recognize that document, sir?

22 **A.** Yes, sir. That is a copy of my professional résumé or CV.

23 **Q.** Thank you.

24 **MR. DOREN:** And, Your Honor, we would tender
25 Mr. Malackowski as an expert on intellectual property

1 licensing and portfolio analysis.

2 **MS. MOSKOWITZ:** No objection.

3 **THE COURT:** Admitted.

4 **BY MR. DOREN:**

5 **Q.** Mr. Malackowski, have you testified previously as an
6 expert witness?

7 **A.** Yes. Of the many cases I've worked on, I have sat in a
8 chair like this in District Court, State Court, International
9 Trade Commission, Bankruptcy Court, more than 50 times.

10 **Q.** And have you appeared before this very Court before, sir?

11 **A.** I have. Your Honor may not recall, but I testified in the
12 *Netlist versus Diablo* case, which was just over five years
13 ago, I think.

14 **THE COURT:** Well, I remember the case. I do not
15 remember you, so....

16 **THE WITNESS:** The case is --

17 **MR. DOREN:** Well, we will try to make him more
18 memorable today, Your Honor.

19 **THE COURT:** Well, that was a pretty memorable case,
20 but it was interesting for lots of other reasons.

21 **MR. DOREN:** Thank you, Your Honor.

22 **BY MR. DOREN:**

23 **Q.** And, Mr. Malackowski, have you previously worked for
24 Apple?

25 **A.** I have. I have testified at trial in one case on behalf

1 of Apple related to patent infringement, and I have been a
2 consulting expert in a half a dozen other cases.

3 **Q.** Thank you.

4 Now, in your experience, sir, and based on your training,
5 why, in your professional opinion, do companies invest in the
6 development of intellectual property?

7 **A.** Well, at its core, intellectual property is a tool for
8 economic development. And the U.S. Constitution itself
9 protects that tool by granting inventors or innovators a
10 limited period of exclusive rights. And the whole purpose of
11 that is to encourage the investment that is necessary to
12 innovate.

13 **Q.** And how do IP owners obtain a return on their investment
14 in intellectual property?

15 **A.** Well, there's a continuum. Most IP owners maintain those
16 rights as exclusive for their sole use and then use those
17 rights to compete in the marketplace.

18 At the other end of the continuum, there are owners who
19 will share those rights, and they are shared under an
20 intellectual property license to allow others to benefit from
21 their investment.

22 **Q.** And then you mentioned there is a spectrum.

23 Are there various hybrid approaches in between?

24 **A.** Yeah. There is almost any endless list of hybrid
25 alternatives, and the IP owner has the opportunity to choose

1 the path that's best suited for them.

2 Q. And is it important for IP owners to have the right to
3 determine how their intellectual property will be used?

4 A. Absolutely.

5 Q. And why, sir?

6 A. Well, ultimately, it comes down to that investment
7 decision and, really, business planning. So if you are
8 running a business that requires innovation and investment to
9 innovate, you need to plan on that and the return that you can
10 expect to justify it.

11 If you lose control over your intellectual property
12 rights, you can no longer predict with any certainty what that
13 return will be. And as a businessperson, you cannot justify
14 that decision and the business will no longer innovate.

15 Q. And, sir, as part of your work, are there -- is there a
16 framework or any guidelines that you have considered regarding
17 the intersection between antitrust issues as they relate to
18 intellectual property licensing?

19 A. Yes, there is. That's referred to in my report. It is
20 the DOJ FTC guidelines on antitrust matters, the same ones
21 that are used when we take the examination for the CLP.

22 Q. And how do you -- how have you used those guidelines in
23 the course of your professional career?

24 A. Well, those guidelines cover the fundamental interplay
25 between intellectual property and antitrust issues. So for

1 me, they come -- become relevant in two ways: One in my
2 consultive or fiduciary capacity as a director for an
3 innovative company; and then, second, as an expert, I have
4 testified on matters related to intellectual
5 property-antitrust intersection, such as patent misuse,
6 step-downs under a Brulotte Rule, RAND compliance for license
7 agreements, a number of issues like that.

8 **MR. DOREN:** And if we could please pull up DX3305.

9 **BY MR. DOREN:**

10 **Q.** And, sir, do you recognize these to be the guidelines to
11 which you have referred?

12 **A.** Yes, sir.

13 **MR. DOREN:** And if we can please take a look at page
14 .007 to .008. And if we can pull out, please, the paragraph
15 that begins with "Field of Use."

16 **BY MR. DOREN:**

17 **Q.** Mr. Malackowski, is this one of the paragraphs or one of
18 the provisions of the guidelines that you cite in your report?

19 **A.** It is.

20 And I won't read it, but, essentially, this reflects what
21 I have just described, which is this exclusivity associated
22 with intellectual property is what provides that incentive to
23 invest in innovation. And it is important to protect that and
24 give the IP owner control over that opportunity.

25 **Q.** Thank you, sir.

1 And a bit over halfway down this paragraph, it states:

2 "The restrictions may do so, for example, by
3 protecting the licensee against free riding on the
4 licensee's investments by other licensees or by the
5 licensor."

6 Do you see that provision?

7 **A.** I do.

8 **Q.** And are you familiar with the concept of free riding?

9 **A.** Yes, sir.

10 **Q.** And what is that?

11 **A.** Well, free riding, Your Honor, is actually when the
12 relationship between the inventor and the user breaks down.
13 There's no longer an agreed-upon contract or set of terms, and
14 so the free rider utilizes the invention without compensation
15 to the inventor.

16 And it breaks down because if that were permitted, then,
17 again, the inventor can't reasonably predict the return on
18 investment, so it can't reasonably and prudently invest in new
19 technology.

20 **THE COURT:** Mr. Doren, can you tell me again where
21 you are? I'm --

22 **MR. DOREN:** Yes, Your Honor. We're in your binder at
23 DX3305. And these were not part of the stipulation. They
24 were objected to as evidence, so that's why they are in the
25 binder we've handed up to you, if the Court was looking at the

1 stipulation.

2 **THE COURT:** Okay. Thank you. I was on -- I had the
3 wrong exhibit.

4 **MR. DOREN:** Thank you, Your Honor.

5 **BY MR. DOREN:**

6 **Q.** And, Mr. Malackowski, have you taken these guidelines into
7 consideration in the course of your work in this case?

8 **A.** Yes, in two ways: One, in determining my affirmative
9 opinions that are reflected in the testimony; and, two, in my
10 review of the Epic Game expert work and opinions, I searched
11 high and low for their consideration of this interplay between
12 antitrust and intellectual property, and I found no mention of
13 intellectual property.

14 **Q.** And just to be sure I'm clear on what you just said, sir,
15 did you review, for example, the expert testimony of
16 Dr. Evans?

17 **A.** That was one example I referred to, yes.

18 **Q.** And did you review or listen to the expert testimony here
19 in court of Dr. Athey?

20 **A.** Yes, sir, it is another example.

21 **Q.** And did you also read the written direct testimony of both
22 of those experts?

23 **A.** I did.

24 **Q.** And did you also read the written direct testimony of
25 Dr. Mickens?

1 **A.** That is a third example, yes, sir.

2 **Q.** And did you also read or listen to the testimony here in
3 court of Dr. Mickens?

4 **A.** Yes. For all three, I've read or listened to their
5 testimony, reviewed their reports and their depositions.

6 **Q.** And did any of the plaintiff's expert witnesses take into
7 account in any way this intersection between antitrust issues
8 and intellectual property rights?

9 **A.** No, sir, not in any way.

10 **Q.** And, Mr. Malackowski, what was your assignment in this
11 matter?

12 **A.** Your Honor, my assignment was to, essentially, assess what
13 I call the innovation footprint for the Apple iOS ecosystem.
14 And by "innovation footprint," I am referring to the research
15 and development investment or commitment that was made, the
16 intellectual property that results, and the use of that
17 intellectual property either by Apple or by others through
18 license, including specifically Epic Games.

19 **Q.** And for that end, sir, did you consider Apple's innovation
20 footprint as it relates to app developers and consumers?

21 **A.** Yes, sir.

22 **Q.** And did you also take into account Apple's IP ownership in
23 evaluating the issues in this case?

24 **A.** Of course, very much as we discussed, understanding that
25 Apple would have control over their IP pursuant to those

1 guidelines.

2 **MR. DOREN:** And, Mr. Eltiste, if we can please look
3 at Slide number 3.

4 (Displayed on screen.)

5 **BY MR. DOREN:**

6 **Q.** And can you please summarize for the Court the opinions
7 that you reached which you'll be testifying about here today?

8 **A.** Yes, sir.

9 Your Honor, I ultimately focused on four opinions. And I
10 won't read them verbatim, but the first one relates to that
11 investment by Apple in research and development and the IP
12 that results.

13 The second opinion focuses on whether or not that IP was
14 used or useful to app developers and consumers, and I found it
15 was.

16 Third, being more focused on this matter, whether or not
17 Epic made use of that intellectual property, and I found they
18 did.

19 And, fourthly, whether or not the requested remedies here
20 by Epic would be reasonable or would, rather, result in a
21 compulsory license without compensation and the impact that
22 would have to Apple's innovation footprint.

23 **Q.** And, Mr. Malackowski, turning to your first opinion, and
24 specifically Apple's substantial and sustained investment in
25 research and development results in valuable IP, what did you

1 do to evaluate or to reach this opinion?

2 **A.** So the first thing I did is develop an understanding of
3 Apple's investment through their publicly available records
4 describing research and development.

5 **MR. DOREN:** And let's take a look, please,
6 Mr. Eltiste, to Slide number 5.

7 **BY MR. DOREN:**

8 **Q.** And are you referring, sir, in terms of this
9 demonstrative, to the information displayed on the left?

10 **A.** Yes, sir.

11 **MR. DOREN:** And can -- let's go ahead and pull that
12 out.

13 **BY MR. DOREN:**

14 **Q.** And can you please describe where you obtained the
15 information reflected here.

16 **A.** This information is actually publicly available. It's in
17 the documents filed by Apple with the Securities and Exchange
18 Commission.

19 **Q.** All right. And can you please describe for the Court what
20 this demonstrative reflects.

21 **A.** This demonstrative shows the investment by Apple in
22 research and development from 2005, roughly commensurate with
23 the start of the development of the iPhone, through the most
24 recent reported data in 2020.

25 **Q.** And how much did Apple spend on R&D in 2005?

1 **A.** That was approximately \$500 million.

2 **Q.** And how much was spent in 2020?

3 **A.** I believe Mr. Schiller described in his testimony, and as
4 shown on this chart, it was in excess of \$18 billion.

5 **Q.** And since we have a demonstrative here, can you describe
6 what trend the R&D spending had over those years?

7 **A.** Well, it is fairly intuitive, in looking at the data, that
8 the trend was continual, upward, with a significant growth in
9 R&D each and every year.

10 **Q.** And what was the total amount -- or what has been the
11 total amount spent on R&D by Apple during this 15-year period?

12 **A.** It was in excess of \$101 billion.

13 **Q.** And why, sir, did you take the R&D expenditures by Apple
14 into account in your work?

15 **A.** R&D reflects the raw materials or the input for the
16 creation of intellectual property. So in my work, whether it
17 be as a board member or a strategy adviser, is to definitely
18 look to and understand the R&D footprint of the business as a
19 starting point.

20 **Q.** And let's go back, please, to your dueling charts here.

21 And can you please tell us what you -- what the right-hand
22 chart reflects.

23 **A.** The right-hand chart reflects Apple's patent applications
24 and grants for a similar period of time, reflecting as a proxy
25 the output of that R&D investment.

1 Q. And how did you obtain this information, sir?

2 A. This information is obtained through proprietary databases
3 that all trace back to Government-provided data by the U.S.
4 Patent Office.

5 Q. And is that information again reflected in the right-hand
6 chart in this fifth slide?

7 A. It is.

8 Q. And does this chart include all active U.S. Apple patents?

9 A. It does. It includes all active utility patents, which
10 are the general invention patents most people think of; it
11 also includes their design patents, which, for example, covers
12 the look of the iPhone; and it covers also utility patent
13 applications. In total, there are over 25,000 patent assets
14 that are reflected on this chart.

15 Q. And why did you look at pending patent applications?

16 A. Well, that is something I always do, because the patent
17 applications are often a prediction of future technologies and
18 an expectation of whether the innovation trend is plateauing
19 or continuing. So it is very important to look at not only
20 what exists, but what is in process.

21 Q. And you put these two charts, the R&D investment and the
22 Apple patent application and grants, on the same demonstrative
23 slide.

24 Why did you make that choice?

25 A. Well, it's really not so much to note that they are

1 similar, which, of course, they are in terms of trend line.
2 Your Honor, it is really more focused on the discontinuities.

3 For example, there are companies where you see R&D
4 continuing to grow significantly, but the number of patent
5 applications plateaus or even falls off. And so that raises
6 an issue, as a licensing professional, as to whether or not
7 the R&D footprint has changed or has become less efficient.

8 Likewise, you may see cases where R&D will plateau, but
9 the number of patent applications keeps growing significantly.
10 That might tell you that those innovations are no longer core,
11 but, rather, are minor improvements on old technologies. So,
12 again, as a starting point, it is important to understand the
13 input, the output, and how they relate.

14 **Q.** And given that framework, sir, when you look at the
15 expenditures by Apple on research and development and you
16 compare that or analyze that in the context of Apple's patents
17 and pending applications, what conclusions do you draw?

18 **A.** Apple has a significant and sustained commitment towards
19 innovation through both their investment and their efforts to
20 protect that innovation through proprietary intellectual
21 property.

22 **Q.** Thank you, sir.

23 And with this foundation laid, did you conduct any further
24 technology-specific analysis of the Apple patents?

25 **A.** Yes. So what we see in the chart relates to Apple as a

1 company. So next I needed to go deeper and focus on the
2 intellectual property focused on the iOS ecosystem
3 specifically.

4 **MR. DOREN:** Mr. Eltiste, let's go to the next slide,
5 please.

6 (Displayed on screen.)

7 **BY MR. DOREN:**

8 **Q.** And, sir, does this demonstrative reflect your process in
9 terms of that research?

10 **A.** It does.

11 **Q.** And can you please describe your research process for the
12 Court.

13 **A.** Yes. It's an iterative process. So it begins by
14 identifying the various technologies that are at issue in the
15 iOS ecosystem; conducting database inquiries using
16 proprietary programs offered in the market; testing those to
17 make sure the terms you used are accurate -- often, you will
18 need to modify that search criteria, run it again, test it
19 again iteratively; and then, ultimately, review the output
20 manually.

21 **Q.** And that last point, sir, I believe is reflected in the
22 last box on the right, as well as your last statement.

23 Can you tell us about the manual review step?

24 **A.** Yes. In the end, there is no substitute to eyes on
25 patents, and so once it is narrowed down to a manageable set

1 of data, I and the team working under my direction at Ocean
2 Tomo actually manually reviewed each and every patent to
3 confirm that it was relevant to our search criteria.

4 **Q.** And, by the way, what data source is being searched to put
5 together that population?

6 **A.** In the end, again, it all traces back to the U.S. Patent
7 and Trademark Office database.

8 **Q.** And how is that database searched? In other words, what
9 was involved in the search process?

10 **A.** So the first thing is to identify the search terms from
11 the record of the case; to then compare those search terms to
12 the descriptions in the patent to make sure that it was
13 relevant to the iOS ecosystem or even games within the iOS
14 ecosystem.

15 **Q.** And how many -- when you said to get the population down
16 to a manageable size for manual review, how many patents did
17 you and your team manually review?

18 **A.** We went from the 25- to 30,000 we started with down to
19 3,500 to 4,000 that we actually manually reviewed.

20 **Q.** And did you personally review each of those patents?

21 **A.** I personally reviewed a number of them, but not all of
22 them personally, though staff, at my direction and training,
23 reviewed each of them with my supervision.

24 **Q.** And was this the first time that you and your team have
25 done this sort of analysis?

1 **A.** No, not at all. In fact, if you walked into our office
2 today, someone is doing this for some client.

3 **Q.** And for what purpose does your firm do such analyses for
4 clients in the ordinary course?

5 **A.** They would vary. It would include litigated matters. It
6 would largely include also strategy consulting or investment
7 decisions. Unfortunately, sometimes we also have to do it for
8 bankruptcies and other disputes.

9 **Q.** And was your patent search informed by your knowledge of
10 Apple's business?

11 **A.** It was, yes, sir.

12 **Q.** And how so?

13 **A.** Well, patent owners, not surprisingly, have a continuum of
14 ways that they manage their intellectual property process.
15 There are some that we refer to as patent collectors, that,
16 when someone comes up with something cool, they decide to
17 patent it just because it is cool.

18 But on the other end, there are more sophisticated firms
19 who are very proactive, not reactive, and they have an
20 explicit policy to protect the innovations they create which
21 they would believe to be relevant and beneficial in the
22 market. And Apple is in that latter category.

23 **MR. DOREN:** And if we can look, please, at DX4080,
24 which should be in your binder and shortly on your screen.

25

1 **BY MR. DOREN:**

2 **Q.** Can you tell us, please, sir, what this exhibit is.

3 **A.** Yes. This is something I note from the Apple website
4 where they describe their -- essentially, their mission
5 regarding intellectual property, and that Apple's mission is
6 to protect that innovation or that innovation is embodied in
7 intellectual property, including patent, trademarks, and
8 copyrights.

9 **Q.** And why did you choose to include this among your
10 demonstratives to discuss this morning?

11 **A.** Really, to emphasize that point, that there is a
12 purposeful connection between those R&D dollars and the
13 intellectual property that we've identified and the products
14 that are in the market.

15 **Q.** And are you familiar with open-source software?

16 **A.** Of course.

17 **Q.** And did you take that into account over the course of your
18 work?

19 **A.** I did in the sense that my work would focus on the
20 proprietary innovation of Apple and not include/consider the
21 open-source innovation, which is, obviously, utilized, as
22 well, but my summaries are based only on the proprietary Apple
23 IP.

24 **Q.** And you've mentioned the iOS ecosystem.

25 In performing your work, what did you understand the iOS

ecosystem to be?

A. It is the integrated innovation that reflects the hardware/software/connecting middleware, the SDKs, the APIs, the code that represents iOS and the products that are operating under it.

Q. And did you find Apple's intellectual property to be relevant to the iOS ecosystem?

A. Absolutely.

Q. And did you prepare a summary of your findings?

A. Yes, sir.

MR. DOREN: Mr. Eltiste, let's please look at Slide 7.

(Displayed on screen.)

BY MR. DOREN:

Q. And, Mr. Malackowski, does this represent your findings regarding the iOS ecosystem?

A. At a summary level, yes, sir.

Q. All right. And if you could please walk us through your conclusions.

A. So narrowing from the 25- to 30,000 patents down to those patents, copyrights, and trademarks that are specific to iOS, I identified and present here categories that are iOS specific that relate to the AppKit or App Store specific, and then the larger collection of developer tools.

Q. And I note that the first entry, if you will, on the left

1 is "iOS."

2 First of all, what do you include in that category?

3 **A.** That would be all patents that specifically reference the
4 iOS system as part of the specification or claims of the
5 patent at issue. And you can see it totals over 1200 issued
6 patents and over 550 patent applications.

7 **Q.** Thank you, sir.

8 And in the center, as I understood it, those would be
9 patents that relate specifically to the App Store; is that
10 correct?

11 **A.** That's true.

12 **Q.** And what were your findings there?

13 **A.** I found 165 granted patents and 91 patent applications.

14 **Q.** And then to the right are patents related to various
15 developer tools; is that right?

16 **A.** Yes, sir.

17 **Q.** And what did you mean by "developer tools"?

18 **A.** That would include all of the various technologies that we
19 have heard here, from in-app purchasing to core video, core
20 motion, user interface kit, et cetera.

21 And when you total them all up, I found more than 2500
22 patents and nearly 700 patent applications.

23 **Q.** And then at the bottom of your slide, you reference "U.S.
24 Copyrights and U.S. Trademarks."

25 Can you please tell us what your analysis was there and

1 what your findings were.

2 **A.** Yes. The analysis was more straightforward because there
3 are, again, publicly available databases to gather that
4 information.

5 But using similar search terms, I found approximately 4900
6 registered copyrights related to iOS ecosystem and
7 approximately 1500 trademarks, all U.S.

8 **THE COURT:** And on the patents, again, are those both
9 software and hardware?

10 **THE WITNESS:** Yes, ma'am, it would include the entire
11 portfolio if it related to the technologies of iOS and the
12 issues here.

13 **MR. DOREN:** Your Honor, I note the clock and I'm
14 about to go to a document. Would you like to break now or --

15 **THE COURT:** So -- yeah, so if it's a good time to
16 break, we can break.

17 **MR. DOREN:** I think so.

18 **THE COURT:** 3305, are you offering that? I don't
19 know that -- this is the DOJ document.

20 **MR. DOREN:** Yes, Your Honor, we would like to offer
21 that in evidence.

22 **THE COURT:** Any objection?

23 **MS. MOSKOWITZ:** We do object to it, Your Honor. It's
24 not evidence.

25 **THE COURT:** Overruled. 3305 is admitted.

1 (Defendant's Exhibit 3305 received in evidence)

2 **MR. DOREN:** Thank you, Your Honor.

3 And also, as I understand it, Mr. Malackowski's CV,
4 DX4876, may not be in the stipulation, so we would move that
5 in, as well.

6 **THE COURT:** Have I admitted CVs from all the other
7 experts?

8 **MR. DOREN:** You have, Your Honor.

9 **MS. MOSKOWITZ:** I don't think that is correct,
10 because we didn't actually think we should offer CVs. But we
11 didn't object to Apple doing it, I guess is the bottom line.

12 **MR. DOREN:** Your Honor, I will withdraw that it's
13 been uniform and complete, but it has occurred.

14 **THE COURT:** Okay. Well, are you withdrawing from --

15 **MR. DOREN:** No, Your Honor. I -- CVs have been
16 admitted. Let me find out over the break, give the Court the
17 true facts, and you can make a decision.

18 **THE COURT:** And on the other document, that is just
19 the first page of something I admitted before, correct? I
20 think it is the one Ms. Forrest gave me, the huge entire
21 binder. Is it 101, I think?

22 **MR. DOREN:** Oh, no, Your Honor. It -- we didn't
23 offer anything from 101. I know the document you are talking
24 about.

25 **THE COURT:** Okay. So is there objection to 4080?

1 **MS. MOSKOWITZ:** No, Your Honor.

2 **THE COURT:** That's admitted.

3 (Defendant's Exhibit 4080 received in evidence)

4 **MR. DOREN:** Thank you, Your Honor.

5 **THE COURT:** Now we are at 10:15 --

6 **MR. DOREN:** Thank you, Your Honor.

7 **THE COURT:** -- so let's go ahead and take our break.
8 20 minutes. Thank you.

9 (Proceedings concluded at 10:15 a.m.)

10 (Proceedings resumed at 10:36 a.m.)

11 **THE CLERK:** Remain seated. Court is in session.
12 Come to order.

13 **THE COURT:** We are back on the record. The record
14 will reflect that the parties are present. Mr. Doren is at
15 the podium. The witness is on the stand.

16 You may proceed.

17 **MR. DOREN:** Thank you, Your Honor.

18 And on the CV issue, Your Honor, the CVs of Professors
19 Lafontaine and Dr. Schmalensee were admitted without
20 objection. Epic has not offered any CVs. And with that, we
21 would again offer DX4876.

22 **MS. MOSKOWITZ:** No objection.

23 **THE COURT:** It's admitted.

24 **MR. DOREN:** Thank you, Your Honor.

25 (Defense Exhibit DX4876 received in evidence)

1 **BY MR. DOREN:**

2 **Q.** Mr. Malackowski, could you please turn to DX3134 in your
3 binder.

4 **MR. DOREN:** And, Mr. Eltiste, if you could please
5 pull that up on the screen.

6 **BY MR. DOREN:**

7 **Q.** Do you have that before you, sir?

8 **A.** Yes.

9 **Q.** And can you tell us what this is?

10 **A.** This is U.S. Patent No. 10,726,604.

11 **Q.** And was this relevant to your research?

12 **A.** Yes. This was one of the patents that I identified as
13 relevant to the iOS ecosystem.

14 **Q.** And can you please walk us through how that determination
15 was made, using this one patent as an example?

16 **A.** Yes.

17 Your Honor, this patent actually relates to Metal or the
18 framework that we've heard testified about at trial. And so
19 if you go towards the back of the patent -- I believe it's
20 Column 10 -- yes, at Column 10, you'll see that this patent
21 includes reference to a client application using the Metal
22 API. And so that would be the trigger point that resulted in
23 this first being alerted to my attention.

24 And so with that, I would go back to the beginning of the
25 patent, the front page, and I can see that it is a patent for

1 "controlling display performance using display statistics and
2 feedback." That itself doesn't tell you Metal, which is why
3 you need to look further. We can see that it's assigned to
4 Apple and that it was filed in 2016, so during the relevant
5 period.

6 If you turn to the specification or Column 1, what we can
7 see is what the technology relates to. So first I noted that
8 it relates to mobile and handheld devices and that it
9 specifically focuses on display hardware.

10 We also learn the benefits of the patent, that this patent
11 is largely focused on that engineering compromise between
12 display quality and energy management.

13 If you look at Column 6, I believe, of the patent, what we
14 can see further is it's technology that is specific to 3D
15 games. So, again, greater confidence that this is one that
16 would be relevant.

17 Likewise, if you go to Column 7, we can see that it's very
18 much specific to graphics rendering within the framework of
19 iOS. By now, we're pretty convinced.

20 And then, lastly, Column 8. This one is unique,
21 Your Honor, because it also talks about the integration of
22 patented technology to copyright protection, I think which
23 we'll talk about a little later in my direct.

24 So that's an exemplar of the type of review that we did
25 for the patents-in-suit.

1 Q. And, Mr. Malackowski, if you could please turn back to
2 Column 1 for just a moment.

3 And one of your observations -- and this is on page .021,
4 and the first highlighted entry says, "However, in most
5 devices, particularly mobile and handheld devices, the display
6 hardware consumes a tremendous amount of the overall energy
7 budget of the device."

8 Do you see that?

9 A. Yes, sir.

10 Q. And then further below in that same paragraph, the last
11 sentence states, "Thus, for a mobile device, a high display
12 refresh can have a significant negative impact on
13 battery-based operating time."

14 And is that what you were referring to when you talked
15 about this patent relating to the tradeoff between graphics
16 and power consumption?

17 A. It is. And it also highlights some of the distinctions
18 between, say, iOS and macOS, which doesn't have the battery
19 problem.

20 Q. And, sir, let's look at just one more example, please. If
21 you could look at DX --

22 MR. DOREN: And, Your Honor, we would move into
23 evidence 3134.

24 MS. MOSKOWITZ: I thought that was already part of
25 the stipulation, but there is no objection.

1 **MR. DOREN:** I appreciate that. I frankly --

2 **THE COURT:** It's not, so I will admit it.

3 **MR. DOREN:** Thank you, Your Honor.

4 (Defense Exhibit DX3134 received in evidence)

5 **BY MR. DOREN:**

6 **Q.** And, Mr. Malackowski, if you could please take a look at
7 Exhibit DX3052.

8 **THE COURT:** You know what? I was looking at the
9 wrong list, so it may have been.

10 **MS. MOSKOWITZ:** I'm not sure either, Your Honor.

11 **THE COURT:** Keep going.

12 **MR. DOREN:** Thank you.

13 **BY MR. DOREN:**

14 **Q.** And, Mr. Malackowski, do you have Exhibit DX3052 before
15 you?

16 **A.** I do.

17 **Q.** And what is that?

18 **A.** This is U.S. Patent 8,620,272.

19 **Q.** And is this one of the patents that you and your team
20 reviewed in the course of your work?

21 **A.** It is.

22 **Q.** And, first of all, do you know what this -- what you
23 concluded this patent relates to?

24 **A.** So here again, we look for that trigger search term. I
25 believe, if memory is right, it's Column 18. And we can see

1 in Column 18 we're talking about an application that relates
2 to the UIKit, which we've heard testimony about in this trial.

3 **Q.** And can you tell us where that is on Column 18?

4 **A.** Yes. So you can see at -- it's at -- starting at line 56
5 of Column 18, there's reference to the "user interface kit" or
6 UIKit.

7 **Q.** Thank you.

8 And were there other elements of this patent that were
9 part of your analysis?

10 **A.** Yes. If we could go back to the front cover.

11 Again, quickly looking at the title, this time we can
12 confirm that it is, in fact, for mobile devices; it is, in
13 fact, an Apple patent; and it was, in fact, filed during the
14 relevant time period or existed during the relevant time
15 period. This one was filed in 2012.

16 **Q.** And have you heard testimony in this trial regarding the
17 UIKit?

18 **A.** Yes. I believe that Epic Games executive Mr. Grant
19 testified regarding the UIKit, and specifically, Your Honor,
20 testified that Epic Games utilized the UIKit API.

21 **Q.** And have you also heard trial testimony about Metal?

22 **A.** Yes. Substantial examples with Metal where that was also
23 used by Epic Games. And, again, not just the kit, but in the
24 case of UI, for example, the underlying code as well. So the
25 testimony was fairly detailed.

1 Q. And setting aside patents for a moment, did you look at
2 other forms of intellectual property?

3 A. Yes. I looked to trademarks, copyrights, and trade
4 secrets.

5 Q. And did you find that Apple has any copyrights or
6 trademarks relevant here?

7 A. Yes. With respect to the iOS platform, I identified a
8 series of copyrights, approximately 4900, if memory is
9 accurate; trademarks, approximately 1500.

10 Q. And what is the interaction, if you will, between patents
11 and copyrights and trademarks?

12 A. They're all part of the asset plan and portfolio that the
13 IP owner has to protect their innovation. In some cases, they
14 work very distinctly, but in other cases, as we saw with
15 Metal, they are interactive, that there will be both
16 trademarks and copyrights and patents and trade secrets that
17 are all working together to protect the particular innovation.

18 Q. Thank you.

19 MR. DOREN: And, Your Honor, I believe 3052 is in
20 evidence.

21 THE COURT: It is.

22 MR. DOREN: Thank you, Your Honor.

23 BY MR. DOREN:

24 Q. And, Mr. Malackowski --

25 THE COURT: Well, it is per the stipulation. I

1 believe the order has posted, so...

2 **MR. DOREN:** Thank you, Your Honor.

3 **BY MR. DOREN:**

4 **Q.** And, Mr. Malackowski, if we could look at Slide 8.

5 And is this a -- first of all, can you describe for the
6 Court what Slide 8 reflects?

7 **A.** Yes.

8 Your Honor, this relatively detailed slide is an interim
9 schedule that I prepared showing a subset of the search terms
10 that I utilized, specifically those terms where I identified
11 patents that I wanted to consider. So you can see in the
12 first column the term itself, and in the remaining columns,
13 the number of patents and patent applications.

14 **Q.** And, sir, is this a -- a broader or longer list, if you
15 will, of what is reflected in your direct testimony?

16 **A.** It is.

17 **Q.** And by that I mean your written direct testimony.

18 **A.** Yes, sir.

19 **Q.** And let's take one example. And we're all familiar with
20 Metal by now, so let's take a look at that, please.

21 And can you please describe or walk us through what this
22 reports or what your findings are regarding patents related to
23 Metal.

24 **A.** Fairly -- as explained, that for the Metal technology, I
25 found 11 U.S. patents and 4 applications, for a total of 15

1 assets.

2 And this is a good example because it also makes clear
3 that it doesn't include, for example, Your Honor, patents
4 related to Metal, like the back -- the material on the back of
5 a smartphone. So part of the iterative process was to make
6 sure that those things were excluded and it really did just
7 relate to the APIs, SDKs, elements at issue here.

8 **Q.** And is this API an example of the way in which -- or the
9 nature of the integrated iOS ecosystem?

10 **A.** Yes. Actually, Metal is a very good example because, as a
11 graphics API, it does interplay with both the hardware of the
12 device, the graphics processing engine, as well as the screen
13 technology, and then the software or middleware that connects
14 them.

15 **Q.** And let's move on, sir, to your second opinion.

16 And can you please remind us of your second opinion on --
17 in which we have now moved on to Slide 9.

18 **A.** Yes. So after understanding the investment made and the
19 resulting IP, the next question, fairly intuitive, is was it
20 being utilized by developers and consumers. And so I looked
21 to the record of the case in Apple's records to address that
22 question.

23 **Q.** And what conclusion did you reach on that?

24 **A.** Yes.

25 **Q.** And what was the basis for that opinion?

1 **A.** First, relating to developers, I looked to the number of
2 apps that were posted to the iOS platform or App Store.

3 **Q.** Let's take a look at Slide 10, please.

4 And can you please tell us what is illustrated on
5 Slide 10?

6 **A.** So Slide 10 looks at the period 2008, shortly after the
7 launch of the iPhone, through the most recent data in 2020 and
8 the number of available apps in the App Store.

9 And what the chart shows is that starting in 2008, there
10 were approximately 500 available, which I think Mr. Schiller
11 testified exceeded their expectations at the time, but today,
12 it's over 1.8 million. So steady, consistent, significant
13 growth.

14 **Q.** And I notice you also have a third number there around the
15 2011 point or so.

16 And what's that number?

17 **A.** We see an inflection point in 2011 of 350,000 apps, so,
18 again, reflecting the continued rapid growth.

19 **Q.** And between 2010 and 2020, what has the overall growth
20 been of the number of apps available on the App Store?

21 **A.** It's grown by more than 500 percent.

22 **Q.** And did you find evidence that Apple's innovations
23 supported app developers and contributed to this growth?

24 **A.** Yes. In several ways.

25 **Q.** And can you identify those for us, please.

1 **A.** First is a quantity factor, the ease of development. So
2 these apps were useful to app developers to create
3 applications faster, easier.

4 And then at a second dimension, there is a quality
5 dimension, is that what they were creating was actual- --
6 actually of higher quality in terms of the number of features
7 that it could incorporate. For example, we saw the
8 demonstration of the app related to the augmented reality of
9 the basketball shot and the APIs or machine-learning API
10 framework that was used for that. That would be an example of
11 enhanced quality.

12 **Q.** Thank you.

13 And did you reach any conclusions or do any analysis on
14 whether Apple's consistent innovation has benefited consumers?

15 **A.** Yes. So that was the last element I considered. We know
16 there is investment, we know there's IP, we know there's
17 product, but is it on the shelf or are people using it. So we
18 needed to look to the number of downloads.

19 **Q.** And is one of the benefits to consumers what we see again
20 on Slide 10 the volume of available apps?

21 **A.** Yes. The first benefit is diversity of choice.

22 **Q.** Let's please move on to Slide 11.

23 Can you please tell us what Slide 11 reflects.

24 **A.** Slide 11 reflects the actual download by consumers from
25 the App Store on a cumulative basis starting in 2008 but

1 growing now through 2020 where it exceeds 180 billion -- B,
2 billion -- downloads.

3 Q. And I note that you -- again, you've got a couple of
4 interim numbers.

5 Can you please tell us what those are.

6 A. Sure. In 2012, we have an inflection point starting at
7 about 25 billion, and then in 2015, '16, we have another
8 inflection point starting at 130 billion.

9 Q. And aside from -- from the sheer number of downloads, are
10 there other ways that users or consumers have benefited from
11 the volume of apps?

12 A. Yes. It's not just quantity; again, it's quality. And
13 the consumer quality benefit is largely focused on the
14 protections around security, which there's been significant
15 testimony about here, as well as privacy.

16 MR. DOREN: Let's go on to the next slide, please.

17 BY MR. DOREN:

18 Q. Mr. Malackowski, you have walked us through a number of
19 trend lines, one being the -- Apple's research and development
20 expenditures; correct?

21 A. Yes, sir.

22 Q. And then on this slide, what can you -- can you explain
23 what's in the upper right?

24 A. In the upper right is the patent applications and grants.

25 Q. And in the lower left?

1 **A.** The App Store availability, product availability.

2 **Q.** And in the lower right, please.

3 **A.** The consumer downloads.

4 **Q.** And can you describe generally -- again, this being a
5 demonstrative -- what each of those trend lines have shown us?

6 **A.** Well, each of those trend lines bear some obvious
7 similarity in that they show consistent, sustained, and
8 significant growth over the mid 2000s through 2020 time
9 period.

10 **Q.** And, sir, why did you elect to put these four different
11 slides that you've reviewed into this one?

12 **A.** Well, it's actually not so much to draw out their
13 similarities, as I just did; it's more so to look to see if
14 there is any discontinuities.

15 So if you put these all together --

16 **MR. DOREN:** Let's go ahead and do that, please,
17 Mr. Eltiste.

18 **THE WITNESS:** -- what you find is that there is a
19 relationship between that starting investment, the protection
20 of IP, the product originated, and the consumer use. There is
21 no discontinuity. None falls off while the others rise or
22 vice versa.

23 **BY MR. DOREN:**

24 **Q.** Thank you, sir.

25 Let's turn to your third opinion and your 14th slide.

1 And, Mr. Malackowski, can you please tell us what your
2 third opinion is that you're offering here today.

3 **A.** Yes. We're getting more specific. So we're going from
4 the 25- to 30,000 patents overall to the 3500 to 4,000 patents
5 I identified for iOS to now a smaller subset that Epic itself
6 has admitted using the related technology. And --

7 **Q.** And what information did you have regarding Epic's
8 acknowledgments of this technology?

9 **A.** There were three primary components of it.

10 First and foremost, the Epic witnesses testified to their
11 use of technology. We've talked about some of those examples
12 already in Metal and UIKit.

13 Second, the Epic experts admit not only that the IP -- or
14 the technology, rather, was used, but that it would be
15 necessary to be used for Epic to house apps on the platform.

16 And then, third, in the legal process, we find in the
17 interrogatories by Epic Games a very detailed and specific
18 list of the technologies that they admit using.

19 **Q.** And I'd like to show you, please, what's been marked as
20 DX3691.

21 **MR. DOREN:** And, Your Honor, I believe that DX3691 is
22 in through stipulation.

23 **THE COURT:** It is.

24 **MR. DOREN:** Thank you, Your Honor.
25

1 **BY MR. DOREN:**

2 **Q.** And, Mr. Malackowski, is this exhibit the interrogatory
3 responses that you referred to?

4 **A.** It is.

5 **Q.** And if you could please look at page 15 of this document.
6 And do you recognize this information, sir?

7 **A.** Yes. This --

8 **MR. DOREN:** Let's go ahead and pull it out so we can
9 all see it.

10 **BY MR. DOREN:**

11 **Q.** And could you please describe what is set out here.

12 **A.** Well, this is the beginning of several pages that identify
13 the technology that's used. I think the list starts best at
14 line, you know, 17, where it describes in the iOS version of
15 *Fortnite*, Epic has used APIs from the following frameworks in
16 the game's executable code, and then it starts to list them.

17 **Q.** All right. And let's take a look at the next page,
18 please, page 16.

19 And can you tell us what page 16 reflects that was
20 relevant to your opinions?

21 **A.** The admission goes on from APIs to the software
22 development kit, SDKs, and Xcode, and it talks specifically
23 about the fact that Epic made use of the SDKs and code. It's
24 starting at line 12. "Epic has used the iPhone, iPad, and Mac
25 SDKs to develop the iOS and Mac versions of *Fortnite*."

1 Q. Thank you.

2 And if you could please continue on to page 17, and can
3 you please tell us what is on page 17 that was relevant to
4 your work.

5 A. Yes. And, you know, just to finish that last answer
6 briefly --

7 Q. Sure.

8 A. -- in addition to admitting that they were used, they also
9 admit that you can't not use them if you want to be on the
10 platform.

11 And then this page talks about TestFlight and then really
12 emphasizes that the Apple technology, intellectual property,
13 is used at each step in the process. It's used from the
14 initial design of the product to the testing of the product to
15 the loading of the product on the platform to the consumption
16 of the product on the platform to the consumer experience.

17 Q. Thank you.

18 And how did the information contained on these pages
19 impact your work?

20 A. They confirmed for me that there was that connection
21 between the technology and intellectual property to the Epic
22 product.

23 Q. And what did you do with this information once you had it?

24 A. So I then went back to the tool set that I had and I input
25 into my search engines the particular names that were

1 admitted, as well as then testing it, reviewing it, testing it
2 again, and then finishing with the manual review.

3 **Q.** And did you, in fact, find patents that were relevant to
4 the various technology identified by Epic?

5 **A.** I did.

6 **MR. DOREN:** And let's look at Slide 15.

7 **BY MR. DOREN:**

8 **Q.** And can you please tell us what Slide 15 reflects.

9 **A.** Slide 15 is the summary of that work, which shows 235 U.S.
10 patents identified, 52 patent applications, and then some of
11 the technologies that are contained within that set, from Core
12 Motion, Core Video, game controllers, etc.

13 **Q.** Okay. And this is not an exhaustive list in terms of the
14 specific APIs; is that correct?

15 **A.** No. It's just a graphic exemplar.

16 **Q.** Now, as the owner of this IP, does Apple have the right to
17 exclude others from using it?

18 **A.** Absolutely. That is the core grant of the U.S.
19 Constitution.

20 **Q.** And does Apple, in fact, seek to exclude developers from
21 using its intellectual property?

22 **A.** No. Apple, in fact, is very proactive. It's sharing its
23 intellectual property to the community through its agreements.

24 **Q.** I'd like to show you, please, and ask you to turn to
25 PX2618, which I know for a fact is in evidence.

1 And do you recognize this document, sir?

2 **A.** I do. It is the Apple Developer Agreement.

3 **Q.** And what do developers obtain through this license?

4 **A.** Well, this is really the first agreement with Apple to
5 access their intellectual property. It is primarily focused
6 on the Xcode and the SDKs, the software development kits,
7 which allows developers to consider whether or not they want
8 to build product to go on the platform. It gives them a
9 chance to experiment and start their work.

10 **Q.** And is there any fee to the developer in signing this
11 license?

12 **A.** No, there is no fee, which explains, in part, the
13 extensive use of this license. I think, again, Mr. Schiller
14 testified that 27 million developers have executed this
15 agreement without payment.

16 **Q.** And does Apple offer a limited license to this
17 intellectual property?

18 **A.** Yes. It's limited in the sense it describes the scope of
19 what can be done with the IP. It explains that the
20 disclosures are confidential and that the disclosures are
21 proprietary -- or the IP is proprietary to Apple.

22 **Q.** Let's look at DX3900, which has also been admitted.

23 And do you recognize this document?

24 **A.** Yes. This is the developer program license agreement of
25 Apple, which has been frequently referred to as the DPLA. And

1 this is the second stage of agreement.

2 Q. And what is the role of the DPLA?

3 A. So the DPLA is used for those who have signed the
4 developer agreement but now want to move forward to have their
5 product or application considered on the platform, and so it
6 discloses or permits additional use of intellectual property,
7 the APIs, for example, additional Xcode, additional SDKs.

8 Q. Is there a fee for entry into the DPLA?

9 A. There is. There is a \$99-a-year program fee.

10 Q. And here again, does Apple provide a limited license for
11 use of its intellectual property?

12 A. It does. And in particular, it requires that apps that
13 use this intellectual property to be put on the platform have
14 to go through app review and then be distributed only through
15 the platform.

16 Q. And has Apple been consistent in the way that it's chosen
17 to license its IP to third-party app developers?

18 A. Yes. This agreement is used by way fewer than 27 million.
19 I think it's about a million developers have executed. But
20 it's been consistent.

21 Q. And what is the immediate benefit to the developer
22 provided by the DPLA?

23 A. Access to that intellectual property to assist, as I
24 mentioned, at every phase of app development, including
25 through launch and technical support.

1 Q. Now, over the course of your career, how many different
2 licensing agreements have you seen?

3 A. I've been doing this for 35 years, so more than a
4 thousand, easily.

5 Q. And is something like the DPLA unusual in the intellectual
6 property context, in your experience?

7 A. No, not at all. This is very consistent with what a
8 licensing professional would expect to see in circumstances
9 like this.

10 Q. Let's turn to your fourth opinion.

11 And, sir, can you please tell us what your fourth opinion
12 is here this morning.

13 A. Yes. So, finally, I looked to the requested remedies that
14 Epic has put forward from a licensing perspective and have
15 concluded that they effectively ask for a compulsory or
16 de facto compulsory license without compensation to Apple and
17 that that would have impairment to innovation.

18 Q. And why do you -- or how do you reach that conclusion?

19 A. Well, I started by looking at the request, both in the
20 Epic Complaint and in the proposed injunctive order -- relief.

21 Q. And what did you find that led you to that conclusion?

22 A. I found that the requested relief would take away Apple's
23 control or Apple's provisions in its license agreement; would
24 force Apple to house, for example, a store within a store for
25 Epic Games under its control and terms.

1 Q. And regarding Epic's request for a store within a store,
2 in what ways would that impair Apple's intellectual property
3 rights?

4 A. Two ways, one of which has been talked about, but one of
5 which perhaps not.

6 So the first way it would impair Apple's intellectual
7 property is that they would no longer receive the compensation
8 that they negotiated for by using their IP.

9 But it's more than that. It's not only that they would
10 lose out on the compensation, but they would be compelled to
11 continue to support Epic Games, for example, in its store not
12 only today, but into the future.

13 So many compulsive licenses are simply, Okay, you can use
14 my stuff, go away, I never want to hear from you again. This
15 is not that. It's, You can use my stuff and I have to keep
16 performing for you now and forevermore. It's quite extreme.

17 Q. What's wrong with that?

18 A. Well, A, it breaks down that fundamental
19 constitutionally-protected benefit of your innovation.

20 But from a business standpoint, that breakdown means it's
21 no longer possible to predict what return you'll get on your
22 innovation and it's no longer, therefore, in many cases,
23 likely justified to invest in that innovation.

24 Q. At the beginning of our discussion, you mentioned or we
25 saw in the IP guidelines a reference to "freeriding."

1 Do you recall that?

2 **A.** Yes, sir.

3 **Q.** Does that have relevance to this point?

4 **A.** Yes. Essentially, the requested relief would allow Epic
5 Games to freeride on the investment in intellectual property
6 of Apple.

7 **Q.** And are Epic's requested remedies consistent with
8 licensing practices generally?

9 **A.** No. It's, at a general level, a violation of that basic
10 agreement of disclosure to the government and a grant of
11 exclusive rights.

12 And at a more detailed level, it's inconsistent with the
13 guidelines that a licensing professional would use, including
14 the FTC/DOJ guidelines.

15 **Q.** And does Epic's requested relief take into account Apple's
16 right to compensation for the IP it has licensed?

17 **A.** Surprisingly, it does not. In my review, I looked to the
18 requested relief and the Epic Games expert reports, and I see
19 in their but-for world no discussion of IP and no discussion
20 of compensation for IP.

21 **Q.** And, sir, in your opinion, what would be the business
22 licensing impact if Epic's proposed injunction were granted?

23 **A.** It would increase Apple's costs, reduce their
24 compensation, and remove their incentive to innovate through a
25 de facto compulsive license.

1 **MR. DOREN:** Thank you, sir.

2 Your Honor, I pass the witness.

3 **THE COURT:** Cross.

4 **MS. MOSKOWITZ:** Your Honor, if I may just make one
5 comment, since not everyone always gets to be present during
6 the appearances in the morning.

7 I had Colleen Kozikowski with me for Dr. Hanssens and
8 Karla Doe is here today for Mr. Malackowski. And that's their
9 first time in the courtroom, so...

10 **THE COURT:** Okay. So I missed then -- Colleen
11 Kozikowski?

12 **MS. MOSKOWITZ:** Kozikowski.

13 **THE COURT:** Another "owski."

14 And then who else did you call first?

15 **MS. MOSKOWITZ:** Karla Doe.

16 **THE COURT:** Karla Doe. I don't even have her on my
17 list, so how do you spell Karla Doe?

18 **MS. MOSKOWITZ:** K-A-R-L-A D-O-E.

19 **THE COURT:** Okay. Welcome to the courtroom.

20 **MS. MOSKOWITZ:** Thank you, Your Honor.

21 **THE COURT:** You may proceed.

22 **MS. MOSKOWITZ:** Thank you.

23 **CROSS-EXAMINATION**

24 **BY MS. MOSKOWITZ:**

25 **Q.** Good morning, Mr. Malackowski.

1 **A.** Good morning, ma'am.

2 **Q.** I write "slash afternoon" and I always say the wrong one.

3 Okay. You talked about some of your prior testimony in
4 other cases.

5 Do you recall that?

6 **A.** Yes, ma'am.

7 **Q.** In addition to the case you mentioned, you provided expert
8 testimony in the *Acantha vs. D-E-P-U-Y Orthopaedics* case?

9 **A.** A patent infringement case, yes, ma'am.

10 **Q.** And in that case, the Eastern District of Wisconsin
11 rejected your testimony, in part; correct?

12 **A.** In part, though I did, in fact --

13 **Q.** Sir, in part it was rejected; right?

14 **A.** Yes, ma'am.

15 **Q.** And the court excluded your opinion on what a reasonable
16 royalty would be there; right?

17 **A.** Generally, yes, that part.

18 **Q.** The court concluded your damages methodology was, quote,
19 unreliable; correct?

20 **A.** I don't recall the specific language, but it rejected a
21 license agreement I relied upon, yes.

22 **Q.** The court held that the, quote, *ipse dixit* nature of your
23 conclusions would, quote, not assist a jury in determining a
24 disputed issue or understanding the evidence; correct?

25 **A.** I accept that.

1 Q. You also offered a damages opinion in *Prism Technologies*
2 *vs. AT&T Mobility*; correct?

3 A. I did not testify in that matter, but I did offer a
4 report, yes, ma'am.

5 Q. Right. And in that case, you were entirely prohibited
6 from offering your opinion and testimony at trial; right?

7 A. In that trial but not in the subsequent trials, yes,
8 ma'am.

9 Q. The court found your reasoning was conclusory; right?

10 A. I don't recall, but I accept that.

11 Q. The court found that you, quote, offered no logical
12 underpinning, end quote, in your analysis; correct?

13 A. I accept that.

14 Q. And that your apportionment that you conducted was, quote,
15 methodologically flawed; correct?

16 A. I do recall that. That is the core issue that was --

17 Q. Sir --

18 A. -- changing at the time, yes.

19 Q. Sir, that's what the court held?

20 A. That's my recollection.

21 Q. The *Rembrandt* case is another case that you had an opinion
22 excluded?

23 A. Yes. That --

24 Q. Okay. Yes?

25 A. -- was a patent case, I recall.

1 Q. Sir, yes?

2 A. Yes.

3 Q. And you offered a patent infringement apportionment
4 analysis there; right?

5 A. Based on a survey, yes, ma'am.

6 Q. And the court determined that you conducted an improper
7 apportionment when calculating a royalty base and that your
8 testimony must be excluded on that basis alone; correct?

9 A. Rejecting the survey, yes, ma'am.

10 Q. Sir, the expert -- when you calculated your royalty base,
11 the court said that it was improper and that your expert
12 testimony must be excluded on that basis alone; correct?

13 A. Yes.

14 Q. Okay. And the court held that your testimony would be
15 unreliable under *Daubert* and Rule 702; right?

16 A. Yes, ma'am.

17 Q. The court found that the flaw in your opinion was not,
18 quote, merely a dispute of fact, end quote, but the, quote,
19 flaw was in the nature of your analysis; correct?

20 A. Related to the survey, yes, ma'am.

21 Q. Sir, you'll have a chance to explain on redirect. I'm
22 just asking you if that's what the court found.

23 The court found the flaw was in the nature of your
24 analysis; right?

25 A. I accept that you're reading from a document I don't have

1 in front of me, so --

2 Q. I'm reading from the opinion. Did you read it?

3 A. Can I -- if you can provide me the opinion, it will be
4 easier for me to --

5 Q. Did you read the opinion?

6 A. Not for years.

7 THE COURT: Again, Ms. Moskowitz --

8 MS. MOSKOWITZ: Yes, ma'am.

9 THE WITNESS: I haven't seen that for a number of
10 years.

11 BY MS. MOSKOWITZ:

12 Q. By failing to use the portion of the revenue stream
13 attributable to the infringing features, the entirety of your
14 damages analysis was found unreliable; right?

15 A. I accept you're accurately reading it, ma'am, yes.

16 Q. And the court wrote that allowing your testimony
17 regarding, quote, such inflated numbers, unquote, to be
18 provided to the jury will -- would be prejudicial, end quote,
19 even if you were cross-examined; right?

20 A. I will accept that.

21 Q. Your testimony was also excluded, in part, by a court in
22 the Northern District of California in the *Oracle vs. Google*
23 matter; right?

24 A. In part, yes.

25 Q. And there you were opining on copyright infringement

1 damages?

2 **A.** I think, in particular, it was future lost profits that
3 was excluded, yes.

4 **Q.** You were doing an apportionment there?

5 **A.** I don't recall if that was apportionment. I recall it was
6 focused on lost profits.

7 **Q.** All right. The court there determined that your opinion
8 would, quote, simply invite the trier of fact to adopt an
9 apportionment methodology that is contrary to the facts, end
10 quote; correct?

11 **A.** I don't recall the specific language. I assume you're
12 reading it correct, so I will accept it.

13 **Q.** But the court prevented the plaintiff from offering your
14 opinion that, quote, simply ignored the numerous critical
15 non-infringing elements, end quote, to which some of the
16 profits should have been apportioned; right?

17 **A.** Again, without it in front of me, all I can do is accept
18 that you are reading it accurately.

19 **Q.** And you don't remember that one either?

20 **A.** I remember details as to the substance, but you're asking
21 me what the court specifically said from something several
22 years ago. And if you could show it to me, I'd be happy to
23 confirm.

24 **Q.** All right.

25 **MS. MOSKOWITZ:** Your Honor, may I approach?

1 **THE COURT:** You may.

2 **BY MS. MOSKOWITZ:**

3 **Q.** And where I will be pointing you first to talk about the
4 Oracle case is PX1173, which should be marked as such in a
5 tab.

6 **A.** Yes. I have it.

7 **Q.** Okay. So I'm looking at page *7.

8 **A.** Page *7 or you mean .7?

9 **Q.** I think I mean *7, but let me find it. .7.

10 **A.** I have 1173.7, yes, ma'am.

11 **Q.** Yes. Okay. Let me catch up to you.

12 Ah, okay. There we go. It's on the screen, as well.

13 **A.** That's on the prior page, .6.

14 **Q.** Okay. Great.

15 And the court here said that -- well, let me go back. You
16 wanted to see it.

17 The court said that your apportionment would, quote,
18 simply invite the trier of fact to adopt an apportionment
19 methodology that is contrary to the facts; correct?

20 **A.** You just took it off the screen. Which paragraph?

21 **Q.** You can -- you can look -- it's the -- on page .6 --

22 **A.** Yes.

23 **Q.** -- second paragraph on the right-hand side that starts *7,
24 last sentence.

25 **A.** Yes, I see that.

1 Q. And the court prevented the plaintiff from offering your
2 opinion that, quote, simply ignores the numerous critical
3 non-infringing elements, end quote, to which some of the
4 profit should have been apportioned; right? That's in the
5 next paragraph, halfway down, "But Oracle...."

6 A. So -- okay. So it's talking about what I can do and what
7 I can't do. Yes, I see that.

8 Q. Right. And it says you cannot be opining because your
9 opinion simply ignores the numerous critical non-infringing
10 elements; right?

11 A. Well, it says I can opine to the 8.8 billion; I just
12 can't --

13 Q. Sir --

14 A. -- opine to that issue.

15 Q. Sir, I'm only asking you about the issue I'm asking you
16 about. Okay?

17 I'm saying the court said that "Oracle may not offer
18 Malackowski's opinion that simply ignores the numerous
19 critical non-infringing elements"; right?

20 A. To that --

21 Q. Did I read that correctly?

22 A. To that issue. But to be fair, your prior question was --

23 Q. Sir --

24 A. -- not opine at all, and that was not correct.

25 Q. Sir, is what I just read correct?

1 **A.** Yes, ma'am.

2 **Q.** Okay. And the court said that your testimony, quote,
3 would invite the jury -- and I'm now on .7, bottom right-hand
4 side, all the last sentence -- that such testimony would
5 invite the jury to expand the scope of its lost profits
6 finding beyond that which can be supported by the evidence.

7 Did I read that right?

8 **A.** Yes, ma'am.

9 **Q.** Okay. Familiar with *Plexxikon vs. Novartis*? Do you
10 remember that one?

11 **A.** That is a currently ongoing matter related to patent
12 licensing.

13 **Q.** And the Northern District of California excluded your
14 opinion in part there, too; right?

15 **A.** Related to licensing, yes, ma'am.

16 **Q.** That was just this past January; right?

17 **A.** I believe so.

18 **Q.** You didn't remember that at your deposition?

19 **A.** I don't think I actually had seen that at my deposition.

20 **Q.** Have you since looked at it?

21 **A.** I have discussed it with my team.

22 **Q.** Okay. So you're familiar with what the court held?

23 **A.** I haven't read it so we should look to the actual
24 language.

25 **Q.** All right. PX1175.

1 **A.** I have it.

2 **Q.** .6.

3 **A.** Page?

4 **Q.** .6.

5 **A.** Yes. I have it.

6 **Q.** All right. There is -- bottom left-hand corner starts,
7 "Although...." It's about seven or so lines up from the
8 bottom.

9 Do you see it?

10 **A.** Yes, relating to the comparability --

11 **Q.** Sir, I don't have a question yet. I'm just asking if you
12 see where I am.

13 **A.** I do.

14 **Q.** Okay. The court held that although you, Mr. Malackowski,
15 "purports to opine on the comparability of the license terms,
16 products, patents, and negotiation positions, much of that
17 evidence is superficial or insufficient to show
18 comparability"; correct?

19 **A.** And then it continues, yes.

20 **Q.** Correct. Yes, I read it?

21 **A.** The first sentence, yes.

22 **Q.** I read what the court held; correct? And she gave some
23 examples.

24 **A.** The court's holding is the whole thing, but you read the
25 first sentence, yes.

1 Q. Okay. All right. Just this month, the court for the
2 District of Delaware excluded your opinion in the *CareDX* vs.
3 *Natera* case; right?

4 A. I don't -- I'm not familiar with that decision, so you'll
5 have to show it to me.

6 Q. All right. You haven't heard about that one yet?

7 A. No, ma'am.

8 Q. All right. That was May 7th, and it's PX1176.

9 So you're not aware that your damages opinions were
10 excluded there?

11 A. Well, you'll have to show me --

12 Q. I'm just asking if you're aware.

13 A. I'm not aware --

14 Q. Okay.

15 A. -- if my damage opinions were excluded.

16 Q. Okay. All right. So if you go to the first page of that,
17 there's a reference under "Memorandum Opinion" that there is a
18 *Daubert* motion pending to exclude your opinions related to,
19 quote, corrective advertising damages.

20 Do you see that?

21 A. I do.

22 Q. All right. And on the next page, bottom left -- nope.

23 I'm on the next page -- oh, the third page -- sorry -- bottom
24 left.

25 It says, "The opinions...." Do you see that sentence,

1 "The opinions are also inadmissible because they are not
2 reliable"?

3 **A.** I see that.

4 **Q.** All right. And on the top right-hand corner of that same
5 page, there's a sentence three lines down, "Malackowski did
6 not engage in reasonable, let alone scientific, efforts to
7 verify the parties' cost estimates"; right?

8 **A.** Correct.

9 **Q.** Okay. And then there is a conclusion that says your
10 testimony would be excluded under both Rule 702 and Rule 403;
11 right?

12 **A.** I don't see that, but I accept that.

13 **Q.** It's on the screen now.

14 **A.** I see that.

15 **Q.** Okay.

16 You testified that Apple has valuable IP.

17 That's one of your opinions; right?

18 **A.** I believe that's true, yes.

19 **Q.** All right. And your testimony -- you testified that your
20 work in this case focused on providing an understanding of the
21 value of Apple's IP; right?

22 **A.** Generally.

23 **Q.** You testified -- well, let's just -- the word "valuable
24 IP" is used by you a number of times; right?

25 **A.** I don't dispute that, no. I think Apple's IP is valuable.

1 Q. All right. But in connection with your work here, you did
2 not conduct a financial valuation of Apple's IP assets; right?

3 A. Meaning an appraisal, correct, I did not.

4 Q. Well, you used the word "financial valuation" in your
5 report.

6 Do you remember that?

7 A. I'm sure I did, but I don't conduct an appraisal. I don't
8 put a dollar figure on the IP, if that's your question.

9 Q. Right.

10 You did not do any work to try to put a dollar amount on
11 any single or collection of Apple's IP; right?

12 A. Correct.

13 Q. And that's true also for Apple's in-app payment processor;
14 for example, you didn't do any financial valuation or
15 appraisal?

16 A. I did not appraise the IAP technology, correct.

17 Q. You testified that Apple's R&D has grown over time. We
18 saw some slides on that.

19 Do you remember that?

20 A. I do.

21 Q. But you have not charted Apple's R&D relative to Apple
22 revenue; right?

23 A. No, I did not.

24 Q. And you did not consider Apple's R&D spend relative to
25 Apple's profits; right?

1 **A.** No, I did not.

2 **Q.** And you didn't consider their R&D relative to Apple's
3 capitalization either; right?

4 **A.** You mean the market capitalization?

5 **Q.** Any version of capitalization.

6 **A.** No. That's not necessary. I did not.

7 **Q.** And you didn't consider Apple's R&D relative to its total
8 assets; right?

9 **A.** Correct.

10 **Q.** And you did not consider Apple's R&D related to any
11 comparable companies, for example, if there even is one.

12 **A.** No. That was not part of my assignment. I did not.

13 **Q.** All right. And in the R&D numbers you included in your
14 demonstratives and in your report, you did not try to
15 disaggregate the R&D expenditures for different lines of
16 business at Apple; right?

17 **A.** No. Apple does not keep records that way.

18 **Q.** Right. You couldn't even do it?

19 **A.** Well, you wouldn't do it from a substantive point of view
20 and you couldn't because the records don't exist.

21 **Q.** You wouldn't do it from a substantive point of view even
22 if there is a set of IP that relates solely to the AirPods,
23 for example? That is not relevant to you?

24 **A.** No, your specific example would not be relevant. I would
25 not expect to see R&D only to the AirPods.

1 Q. Okay. So if there were a set of R&D relevant to the
2 AirPods, you would not include it in your analysis?

3 A. Well, I would include it in total corporate ID for the
4 reasons Mr. Schiller explained, that it's integrated.
5 Obviously, the AirPods work with the software and hardware of
6 the phone, but I would not have broken it out for you today.

7 Q. And so it's appropriate, in your view, to include all IP
8 for even the AirPods and any other accessories in your
9 analysis here all together.

10 A. Exactly, because it utilizes that same integrated set of
11 IP.

12 Q. And you're basing the integration on Mr. Schiller's
13 testimony?

14 A. In part, but also my review of the patents that, in the
15 specifications, describe that integration.

16 Q. All right. But you're -- that's just based on the
17 patents, not any internal Apple documents?

18 A. Well, patents are essentially internal Apple documents.
19 They're public, too, but it's Apple who wrote those
20 specifications.

21 Q. Other than the patents, then, I'm asking, are there actual
22 internal documents that you can't look up on a patent search
23 that you are including in that, other than Mr. Schiller's
24 testimony here?

25 A. Well, there is other testimony in the record as well that

1 describes the integrated nature of --

2 **Q.** So that's a "yes," then?

3 **A.** Yes.

4 **Q.** Okay. Fine.

5 So you did not quantify in any way the amount of Apple's
6 investments in IP assets specifically associated with the App
7 Store; right?

8 **A.** There is in my analysis a specific determination of
9 patents and copyrights --

10 **Q.** Different question.

11 **A.** -- to the App Store.

12 **Q.** Different question.

13 You did not quantify the amount of Apple's investment in
14 IP assets specifically associated with the App Store; correct?

15 **A.** Correct.

16 **Q.** Okay. And you did not quantify Apple's investment in
17 innovations that specifically relate to APIs; right?

18 **A.** Well, I consider the patents an investment in innovation,
19 but I did not quantify the dollars of R&D specific to any API,
20 SDK, true.

21 **Q.** And as far as you're aware, there is not even a specific
22 number anywhere for Apple's investment in tools and services
23 associated with the App Store that Apple keeps in the normal
24 course; right?

25 **A.** Not any number that would reflect the answer to your

1 question.

2 **Q.** And you did not ask anyone at Apple, your client, whether
3 it allocates or could allocate R&D spending to the App Store
4 specifically?

5 **A.** Well, I ultimately did discuss that, for example, with
6 Mr. Schiller, but in preparing my analysis, I had the benefit
7 of knowing it wasn't done and the reasons it wasn't done.
8 That seemed reasonable to me.

9 **Q.** All right. But you didn't ask if they could do it for you
10 for this exercise?

11 **A.** Understanding technology, I wouldn't ask that question
12 because I would find it meaningless.

13 **Q.** Okay. Documents and testimony that you reviewed confirmed
14 that the specific costs of development of Apple's IP was not
15 the basis for selecting 30 percent of the commission for the
16 App Store; correct?

17 **A.** Correct.

18 **Q.** You talked a bit about this but-for world or if we -- if
19 the remedy is granted, Epic is basically seeking a compulsory
20 license.

21 **Do you remember that testimony?**

22 **A.** Yes. The "but-for" term is from Epic's experts.

23 **Q.** Okay. But you understand what we mean by that, that we're
24 talking about in the event of the remedies being sought being
25 granted?

1 **A.** I do.

2 **Q.** Okay. And you say that the result of that would be to
3 reduce the potential return to Apple from its innovations?

4 **A.** I believe that's true.

5 **Q.** So just to be clear, you're aware Apple currently
6 monetizes its IP across the entirety of its business, from
7 placing applications with customers, from selling devices, and
8 all that it does; right?

9 **A.** As an integrated platform, yes, ma'am.

10 **Q.** And you're familiar with the various fees that Apple
11 charges developers.

12 You talked about some of those earlier; right?

13 **A.** Yeah. The program fee, for example.

14 **Q.** Like the \$99 annual program fee for developers?

15 **A.** That's what I was referring to.

16 **Q.** Yes.

17 And also -- I don't think you talked about it -- you are
18 also familiar with the Enterprise account?

19 **A.** I think that's 299, if I recall.

20 **Q.** Per year; right?

21 **A.** Yes, ma'am.

22 **Q.** And those fees, taken together across developers, provide
23 Apple some return on its investment in IP associated with the
24 App Store; right?

25 **A.** Well, it provides a return for its business generally,

1 which would include all contributions, including IP.

2 Q. Including App Store?

3 A. Everything.

4 Q. Okay. Apple's profits on sales of iOS devices are also
5 clearly part of Apple's return on its investment in the iOS
6 ecosystem, as well; right?

7 A. I don't disagree with that.

8 Q. And you understand that Apple makes significant profits
9 from iOS devices each year; right? We're not going to say
10 numbers.

11 A. "Significant" is not an accounting term, but they do make
12 profits each and every year that have been described in this
13 court.

14 MS. MOSKOWITZ: Your Honor, just for confidentiality,
15 is it possible for me to point him to the deposition where the
16 number is said where he agrees, just so we can get that?

17 THE COURT: Isn't it in the record, Ms. Moskowitz?

18 MS. MOSKOWITZ: I'm not sure. It might be.

19 Okay. We can move on.

20 THE COURT: I mean, you can. I just assume that -- I
21 mean, I've got thousands and thousands of pages. I was
22 assuming it's in the record somewhere.

23 MS. MOSKOWITZ: You know, if it's not, we are going
24 to have to fix it. So we will go back and confirm.

25 THE COURT: We can do it quickly.

1 **MS. MOSKOWITZ:** No. That's okay, Your Honor. I
2 think I can move on.

3 **BY MS. MOSKOWITZ:**

4 **Q.** You agree that profitability is informative of the return
5 associated with a particular innovation; correct?

6 **A.** It can be.

7 **Q.** And you did not find Apple's profits on sales of iOS
8 devices to be relevant to your analysis here; right?

9 **A.** No. I did not conduct that profit analysis. It was not
10 relevant to my assignment.

11 **Q.** And you have not presented an opinion as to what would be
12 a fair or reasonable compensation for use of Apple's IP under
13 this but-for scenario; right?

14 **A.** No. My only opinion in that regard --

15 **Q.** No?

16 **A.** -- is looking at Epic's experts.

17 **Q.** Yes. So "no"?

18 **A.** No, I did not develop my own assessment of that.

19 **Q.** And you were not even asked to quantitatively measure
20 Apple's return on its investment in the iOS ecosystem; right?

21 **A.** True.

22 **Q.** You talked about the DPLA on direct.

23 Do you recall that?

24 **A.** I do.

25 **Q.** And your testimony is that through the DPLA, Apple

1 provides access to its IP; right?

2 **A.** As well as through the developer agreement, that's true.

3 **Q.** Okay. Well, in terms of the DPLA, we'll talk about that
4 here.

5 I think in your binder you should have DX3370, which I
6 believe is the same one you looked at on direct.

7 **A.** In your binder.

8 **Q.** It should be in my binder, as well.

9 **A.** If they're in numerical order, I don't. So I --

10 **Q.** They should be by PXs and then DXs.

11 **A.** I have DX3305 and then -- oh, here we go. This is -- yes.

12 **Q.** You've got it?

13 **A.** Yes.

14 **Q.** Okay. And that's the DPLA for developers?

15 **A.** Yes, ma'am. Yes.

16 **Q.** I'm right, sir, am I not, that nowhere in the DPLA does
17 Apple list even one patent that it's licensing pursuant to
18 that agreement; right?

19 **A.** True. You would not see a list of patents specifically.

20 **Q.** Okay. Not you would not. You do not see a list of one or
21 more patents at all in the DPLA; correct?

22 **A.** Correct.

23 **Q.** And so if I were a developer and I wanted to know what IP
24 I was licensing from Apple through the DPLA, I wouldn't find
25 it in the DPLA; right?

1 **A.** No. You could find it, but it wouldn't --

2 **Q.** Sir --

3 **A.** -- be in this agreement, that's true.

4 **Q.** Okay. I'm just asking if I would find it in the DPLA.
5 I would not; right?

6 **A.** You would not.

7 **Q.** All right. And you testified about Apple's IP rights, and
8 I think you came up with about 3200 patents and patent
9 applications relating to app distribution and development.

10 Is that what you said?

11 **A.** Related to app developer tools, yes.

12 **Q.** And unlike Apple developers, you had access to internal
13 Apple documents and Apple employees; right?

14 **A.** That is a true statement.

15 **Q.** And, in fact, you conducted interviews with certain
16 current and former Apple employees; right?

17 **A.** Correct.

18 **Q.** But throughout the course of those interviews, no one at
19 Apple gave you a file that said, Here's the specific IP
20 licensed by Apple pursuant to the DPLA; right?

21 **A.** True.

22 **Q.** Nobody at Apple said, Here's the list. Here are the
23 patents that we license pursuant to the DPLA; right?

24 **A.** No one actually gave me that list, that's true.

25 **Q.** And nobody told you that that list exists, did they?

1 **A.** Well, I knew that list exists in the Patent Office, but I
2 don't know if anybody directed me to it.

3 **Q.** Other than searching terms -- other than searching
4 terms -- in the PTO, there does not exist, to your knowledge,
5 a list at Apple that says what IP is being licensed pursuant
6 to the DPLA; correct?

7 **A.** I'm not aware of any such list.

8 **Q.** Did you ask for it?

9 **A.** No.

10 **Q.** Would you agree that, generally speaking, licensing
11 agreements should clearly define what is being licensed and
12 the specific rights that the licensor is granting to the
13 license?

14 **A.** Yes, but such does not require --

15 **Q.** Sir --

16 **A.** -- a list.

17 **Q.** Yes, you agree?

18 **A.** Sure.

19 **Q.** Okay. And you would agree, would you not, that the
20 patents to be licensed should be identified in the licensing
21 agreement?

22 **A.** Identified by number, not necessarily. Identified by
23 description at least, yes.

24 **Q.** Okay. And when many patents are involved, a specific list
25 of patents is often appended to licensing agreements; right?

1 **A.** Often that's the case generally when it's a very small set
2 of patents.

3 **Q.** Okay. So if it's too big, it doesn't get appended.

4 **A.** Well, it's not really related to that. It's if you are
5 licensing a set of patents only, it gets appended, but if you
6 are giving a general grant to anything we have and will
7 develop, then we don't provide that list.

8 **Q.** And is that what is happening in the DPLA, a broad grant?

9 **A.** Essentially as relates to the technology in the
10 development tools, yes.

11 **Q.** All of the technology that you referenced in your report
12 is licensed pursuant to the DPLA?

13 **A.** To the extent it exists within those development tools,
14 the patent rights are -- according to the terms of the
15 agreement provided, yes.

16 **Q.** Well, the agreement doesn't talk about any specific IP;
17 right?

18 **A.** For the reasons I described, true.

19 **Q.** So I'm just talking now not about restrictions; I'm
20 talking about what the portfolio is that's encompassed. So I
21 just want to focus on that for the question.

22 Is it your position that the entirety of every piece of IP
23 mentioned in your testimony, in your written direct testimony
24 and all the exhibits, is licensed under the DPLA?

25 **A.** No.

1 Q. Okay. How do I know which ones are and which ones are
2 not? Do you say that anywhere in your written direct
3 testimony?

4 A. Only through identification of the particular technologies
5 at issue.

6 Q. Okay. That's not in the DPLA.

7 A. It is not, true.

8 Q. You have a bunch of appendices that list the -- let's just
9 say the 165 patents and applications that you say are related
10 to the App Store.

11 Do you remember that number?

12 A. I do.

13 Q. Okay. Every single one of those 165 patents are licensed
14 under the DPLA? Yes or no?

15 A. Generally, yes, that they would have a right to use that
16 technology consistent with the terms of the agreement, not a
17 broad license to do whatever they wish, but consistent with
18 the terms of the agreement.

19 Q. And all of the 3200 patents and patent applications
20 related to tools are also licensed under the DPLA?

21 A. My understanding is yes. So you wouldn't be sued for
22 patent infringement if you used them consistent and pursuant
23 to the terms of the agreement.

24 Q. Are private APIs something that you studied?

25 A. I'm familiar with them.

1 Q. Are those included in the DPLA or not?

2 A. I don't have an opinion. I did not compute those.

3 Q. Did you look to see whether those were the subject of IP
4 protection?

5 A. I did not.

6 Q. So what you did to try to identify the patents and patent
7 applications are you did a bunch of searches within the PTO
8 system; is that right?

9 A. My analysis included, quote/unquote, a bunch of searches,
10 yes.

11 Q. Well, the list you came up with of patents and patent
12 applications was generated from those searches; correct?

13 A. And the input and analysis I did related thereto, yes.

14 Q. But that's a whittling, not an expansion; correct?

15 A. Fair. So the initial set of Apple patents came from the
16 USPTO based upon assignment.

17 Q. Okay. So you took that broader list and you did some
18 things to narrow it down to what you present.

19 A. Sure.

20 Q. Okay. So I'm just trying to be clear that the source for
21 all of those was public available searches on the PTO.

22 A. All of the patents are publicly available on the PTO, all
23 the ones that I considered, yes.

24 Q. They're not just available; that's how you generated the
25 list from which you did your work.

1 **A.** Well, more specifically, the list was generated through a
2 commercially available program that accesses and cleans those
3 databases, but they all tied back to the PTO.

4 **Q.** Okay. Queries were done by you or the system you used to
5 query the publicly available database to generate the list of
6 patents and patent applications; yes?

7 **A.** No. It's more complicated than that. If you want me to
8 explain, I'm happy to.

9 **Q.** I don't.

10 I just -- I'm just trying to understand that this is all
11 from public source -- searches of public sources; you did not
12 get any help or internal information to point you to any of
13 these patents and patent applications?

14 **A.** Well, there is help provided by the commercial programs
15 that allow you to do those searches efficiently, and they all
16 do tie back to data that originates at the Patent Office, but
17 there are steps in between.

18 **Q.** You used search terms to identify Apple patents or
19 applications that contained those search terms; right?

20 **A.** True.

21 **Q.** Okay. And you did similar for trademarks?

22 **A.** Yes, ma'am.

23 **Q.** All right.

24 You showed a couple of examples of patents.

25 Do you remember that?

1 **A.** I do.

2 **Q.** All right. And I want to talk just for a moment about the
3 165 that are under the App Store app logo.

4 **Do you remember that on your Slide 7?**

5 **A.** I do.

6 **Q.** And you were asked on direct if that set, that 165, quote,
7 relates specifically to the App Store, and you said "yes."

8 **Do you remember that?**

9 **A.** Generally, yes.

10 **Q.** All right. That's not quite right, is it?

11 **A.** They relate to the terms that include the App Store, yes.

12 **Q.** They reference App Store; correct?

13 **A.** Of course.

14 **Q.** But that's how they were generated, they reference the App
15 Store; right?

16 **A.** That's the original reference, and it's -- it's more
17 specific than that. It depends where and how they reference
18 it, but at a general level, you're right.

19 **Q.** Why don't you look at your written direct, please,
20 paragraph 23.

21 **A.** Yes, ma'am.

22 **Q.** All right. On the last bullet there, it says, "165 U.S.
23 patents and 91 U.S. patent applications referencing the App
24 Store"; right?

25 **A.** Yes, ma'am.

1 Q. Okay. And the specific search term you used to identify
2 the patents referencing the App Store was, quote, App Store;
3 right?

4 A. That would be the starting point, yes, ma'am.

5 Q. Okay. The starting point to generate the list that you
6 were then going to -- I think you put eyes on patent to
7 whittle down; right?

8 A. And steps in between, but generally.

9 Q. Okay. So "App" -- the word "App Store" was used through
10 this complicated query mechanism and generated a set that you
11 then did some work on; right?

12 A. Yes.

13 Q. Okay. And you say there is no substitute for eyes on
14 patent to confirm that the results were actually relevant to
15 what you were looking for; right?

16 A. Generally, yes.

17 Q. And you said you or someone on your team looked at the
18 results?

19 A. Yes, ma'am.

20 Q. On the 165, how many did you review?

21 A. Oh, I don't have a specific count for you as I sit here.
22 It would have been a modest number. Most of the review was
23 done by the team.

24 Q. Ballpark "modest" for me. Five?

25 A. A dozen.

1 Q. A dozen. Okay.

2 And you acknowledge that your search could be
3 over-inclusive; right?

4 A. And under-inclusive, yes.

5 Q. Okay. It could be over-inclusive, yes?

6 A. Yes, ma'am.

7 Q. Okay. And one way it could be over-inclusive is if the
8 patent contains the word "App Store" but the patent actually
9 has nothing to do with the App Store; right?

10 A. Technically possible, yes.

11 Q. It wasn't supposed to happen, though, right, because you
12 had eyes on.

13 A. Well, it depends on the specific patent. So if you have
14 one in mind, we should look to it.

15 Q. Sure. PX1182. Let me know when you're there, please.

16 A. I am.

17 Q. Okay. This is a patent for the graphical user interface
18 for display screen or portions thereof?

19 A. But most important, this is a design patent, not a utility
20 patent.

21 Q. So that's not in your 165?

22 A. I include those separately as well, yes.

23 Q. So it's included in your set; right?

24 A. It's included in my set overall, yes.

25 Q. Okay. And it's included in what is licensed under the

1 DPLA?

2 **A.** To the extent that it's necessary for the designer, but,
3 generally, the app developers are not using Apple's design
4 patents. Generally, those are used by Apple.

5 **Q.** Okay. So is there any way for me to tell from your
6 written direct testimony which of the 165 patents you actually
7 don't think are licensed under the DPLA? Can you point me to
8 a paragraph?

9 **A.** Well, the 165, I think, would be licensed. But I can't,
10 as I sit here, tell you the design patent is included in your
11 list --

12 **Q.** All right.

13 **A.** -- because the design patent is segregated separately.

14 **Q.** Right. It's not my list, it's your list, so let's look at
15 it.

16 DX5447 is the spreadsheet that was produced. And I saved
17 a couple trees and didn't print the printout, so we are going
18 to pull it up on the screen.

19 This is, I will represent, produced as the Apple App Store
20 patents, and there is 165 plus 91 patent applications. If you
21 want to scroll down to the last row, which adds things up all
22 the way.

23 Okay. All right. Do you see that?

24 **A.** I do.

25 **Q.** Okay. So if I find this patent on here, you would agree

1 that you did include it in your list of patents referencing
2 the App Store, right, the 165?

3 **A.** If this is that list, then, yes, of course.

4 **Q.** Okay. All right. So why don't we search for the number.
5 And it's -- well, let's see. Yeah, there are no commas, I
6 think, so if we search for 617334, will we find it maybe?
7 Yes, there it is.

8 Do you see that?

9 **A.** Yes.

10 **Q.** All right. That's the one we were just talking about;
11 right?

12 **A.** Yes, ma'am.

13 **Q.** All right. So now that we see it here, is it licensed in
14 the DPLA?

15 **A.** So as a design patent, I would not expect it to be
16 utilized by a developer. I would expect it to be part of the
17 intellectual property of Apple so included in that
18 intermediate dataset.

19 And because I wouldn't expect it to be used, I wouldn't
20 expect it to be specifically licensed to, say, Epic.

21 **Q.** All right. So should we delete that from the list?

22 **A.** No, because --

23 **Q.** Why not?

24 **A.** -- this is the interim analysis before we get to that 252
25 that are specific to Epic.

1 Q. Why are we talking about Epic? I'm just asking about the
2 DPLA. Epic is not the only developer. I imagine you know
3 that; right?

4 A. I do.

5 Q. There is actually, I think you said, 1.8 million apps
6 on --

7 A. Yes, ma'am.

8 Q. -- the App Store?

9 A. Yes, ma'am.

10 Q. How many are Epic's? Do you know?

11 A. A handful maybe. I don't know.

12 Q. Okay. And I think you might have said a million
13 developers have entered the DPLA?

14 A. Approximately.

15 Q. Okay. So they are all entering, I think you pointed out
16 very clearly, the same DPLA; right?

17 A. Yes, ma'am.

18 Q. Okay. Are those developers, any of them, licensing this
19 patent under the DPLA?

20 A. Again, I don't believe they would be utilizing this
21 patent. This is a patent Apple would be utilizing as reflects
22 a design on their phone.

23 Q. So if this list was to be used or tried to be used as the
24 list of patents being licensed to developers under the DPLA,
25 should I delete it?

1 **A.** Well, you wouldn't delete it because it would depend upon
2 whether or not this developer had some special reason to use
3 this technology.

4 The DPLA is a broad grant that will give you access to IP
5 to develop your apps, would then review them, and if it's
6 using our IP and we post it, you have a license to that IP.

7 So you have to look at the app and compare it to the list.
8 This is the population.

9 **Q.** Okay. So you don't know what you are licensed until you
10 go through app review and get approved?

11 **A.** Well, you don't know what you are licensed to unless you
12 know what you want to use.

13 **Q.** Okay. All right. Well, okay. We'll move on.

14 Why don't we look at the patent itself, which I think you
15 have in front of you, and I think we can put it up on the
16 screen, as well.

17 I'm looking on page 1 in the description. After the
18 figures, there is a couple of trademark discussions. It
19 starts, "The AT&T trademark...."

20 Do you see that?

21 **A.** No. I'm sorry. Where are you at?

22 **Q.** I'm on the --

23 **A.** Oh, yes.

24 **Q.** Right there. Do you see that?

25 **A.** I do.

1 Q. Okay. And about five lines down, it says -- starts, "The
2 App Store...."

3 Do you see that?

4 A. Yes, sir.

5 Q. "The App Store" --

6 A. Yes, ma'am.

7 Q. I won't take it personally.

8 A. Sorry. My fault.

9 Q. "The App Store trademark on the bottom of the figures is
10 the property of Apple, Inc."

11 Do you see that?

12 A. I do.

13 Q. All right. What if I -- should we just do the little
14 search for "App Store" and see if that appears anywhere else
15 in here?

16 MS. MOSKOWITZ: Mr. Rudd, would you mind?

17 BY MS. MOSKOWITZ:

18 Q. Okay. So that's the only place "App Store" is in this
19 patent.

20 Would you agree with me?

21 A. I'll accept that.

22 Q. All right. And would you agree with me that this is not a
23 patent related to the App Store?

24 A. No. I -- it explains that this is a design patent for --
25 you can see in the image --

1 Q. Sir --

2 A. -- how apps are displayed. So --

3 Q. Sir --

4 A. -- I don't agree.

5 Q. Okay. So you believe this is about the App Store, this
6 relates specifically to the App Store?

7 A. This relates to the iOS ecosystem in particular as it
8 relates to the design and display of apps on the iPhone.

9 Q. I'm going to ask you again, then.

10 Is it your view and testimony that this patent relates
11 specifically to the App Store? Yes or no?

12 A. With the qualifier I just gave you, yes.

13 Q. Okay. Well, that will speak for itself.

14 Shall we look at another example, 1183, PX1183.

15 **MS. MOSKOWITZ:** Why don't we -- before we even look
16 at it, since I think I'm going to have to prove to you that
17 it's in your list -- why don't we go back to the same
18 spreadsheet we were in, Mr. Rudd, which I believe is DX5447.

19 And why don't we go ahead and search for the number, 10368799.

20 **BY MS. MOSKOWITZ:**

21 Q. All right. Do you see that that patent is in there,
22 Mr. Malackowski?

23 A. I do.

24 Q. Do you see that it's titled "System for determining the
25 quality of sleep"?

1 **A.** I do.

2 **Q.** Okay. Now, why don't you please turn where I was
3 originally sending you, to PX1183. And if you can confirm
4 that that's the same patent number and same description.

5 **A.** Yes, ma'am, I believe it is.

6 **Q.** All right. And so do you agree with me that this is in
7 your list of 165 referring to the App Store?

8 **A.** Yes, ma'am.

9 **Q.** All right. If you could turn to page 12 of this patent.

10 **MS. MOSKOWITZ:** And, Mr. Rudd, if you could also pull
11 it up.

12 **BY MS. MOSKOWITZ:**

13 **Q.** There is a "Summary of Invention" that you should come
14 upon.

15 Do you see that on the bottom there?

16 **A.** I do.

17 **Q.** Okay. And it talks about an invention about "system and
18 method for effectively determining the quality of sleep of at
19 least one user."

20 Do you see that?

21 **A.** I do.

22 **MS. MOSKOWITZ:** Okay. And let's do that search
23 again, Mr. Rudd. Would you mind searching for "App Store" in
24 this document.

25 All right. And let's zoom in. Oh, yeah. So -- hang on.

1 **BY MS. MOSKOWITZ:**

2 **Q.** Do you agree that we just have one instance of "App Store"
3 in here?

4 **A.** Yes, ma'am.

5 **Q.** Okay. So let's go to that one.

6 **MS. MOSKOWITZ:** All right. And, Mr. Rudd, if you
7 wouldn't mind blowing that up.

8 **BY MS. MOSKOWITZ:**

9 **Q.** There's a discussion of some prior art devices in the
10 beginning of that paragraph.

11 Do you see that?

12 I'm still on page 12 above "Summary of Invention." It's
13 right next to line 35. Are you on page 12?

14 **A.** I'm looking at your screen.

15 **Q.** Okay. Do you see that sentence, "There are also prior art
16 devices..."?

17 **A.** Yes, ma'am.

18 **Q.** All right. If you keep going on down about six lines or
19 so, it talks about "the RestOn device."

20 Do you see that?

21 **A.** I do.

22 **Q.** And it talks about the RestOn device using a strip of
23 sensors for this purpose, and it says, "However, it is not
24 very efficient for determining the exact body posture of the
25 user."

1 Do you see that?

2 A. I do.

3 Q. It says, "This App is publicly available in the Apple iOS
4 App Store."

5 Do you see that?

6 A. I do.

7 Q. Are you going to agree with me that this one doesn't
8 relate specifically to the App Store?

9 A. No. If you look to the drawings of this patent, it talks
10 about how this technology is utilized on the iPhone to provide
11 additional, in this case, body motion signals for a user.
12 This would be an example of one of those tools that's made
13 available.

14 Q. Okay. Did you look at either of these two as the dozen
15 that you reviewed?

16 A. I don't recall.

17 Q. Okay.

18 A. I don't recall them, so probably not.

19 Q. All right. We talked about how your list may be
20 over-inclusive. It may be over-inclusive to the extent that
21 certain patents might be counted in multiple categories.

22 You would agree?

23 A. I explicitly state that in my report, yes, ma'am.

24 Q. Okay. So you would agree with that? Yes?

25 A. Yes, ma'am.

1 Q. You talked about trademarks. I think you said 1500 or so
2 trademarks?

3 A. Approximately.

4 Q. And you said those are all part of the asset plan and
5 portfolio, I think were the words you used.

6 Do you remember that?

7 A. I accept that.

8 Q. Okay. And you testified that Apple has IP rights relating
9 to its registered trademarks; right?

10 A. Trademarks are a form of intellectual property, yes.

11 Q. Okay. And are those licensed in the DPLA?

12 A. Not necessarily, no.

13 Q. Okay. Are some of them?

14 A. I don't believe, generally speaking. And, again, this is
15 just an assessment of what Apple's invested in.

16 Q. Okay. So you talk about the trademarks just to talk about
17 what Apple invested in but not what it's licensing to
18 developers.

19 A. Well, it's more specific. Developers do use the
20 trademarks.

21 For example, we saw testimony of Epic Games using the App
22 Store trademark to promote *Fortnite*, so it is possible. It
23 does happen that Apple licenses its trademarks to developers.

24 Q. All right. Are they doing that in the DPLA?

25 A. I don't believe it's specifically set forth in the DPLA.

1 Q. So how does a developer know whether it's licensed to use
2 a specific trademark?

3 A. Well, as described by Mr. Schiller, there are teams at
4 Apple that coordinate with the developer teams to help them
5 with the tools and intellectual property that would be
6 valuable to them.

7 So to the extent that it was a design patent or a
8 trademark that's typically used by the company only and it was
9 appropriate for them to license it, they would.

10 Q. All right. So that's an ad hoc analysis?

11 A. I don't think it's ad hoc because it's a systematic effort
12 to coordinate between the in-house teams and the developer
13 teams. It's a very robust platform.

14 Q. Okay. But there is no document that says, I, developer,
15 have access to these trademarks for use of promoting my app,
16 for example?

17 A. I think --

18 Q. There is no way to find that?

19 A. -- that would be a separate agreement from the DPLA.

20 Q. Does it exist?

21 A. I don't know. It wasn't part of my consideration.

22 Q. Yeah. You have not seen anything?

23 A. I have not seen a trademark license specifically.

24 Q. Okay. So it was not part of your analysis to understand
25 whether and to what extent Apple actually licenses its

1 trademarks to any developer?

2 **A.** That's not true. I explained how I considered it in my
3 analysis, but I did not seek to conduct an inventory of the
4 subset of trademarks that were specifically licensed to
5 developers. That was not part of my assignment.

6 **Q.** One of the trademarks you list is the one that we all
7 know, "There Is An App For That"; right?

8 **A.** I mentioned that specifically in my report.

9 **Q.** Is that a trademark that is licensed under the DPLA?

10 **A.** I don't believe so.

11 **Q.** Okay. And how do I know that? Do I find that in the
12 DPLA?

13 **A.** As you've asked me and I have explained, I don't believe
14 the DPLA provides those trademark licenses. I believe that's
15 a separate and distinct form of agreement.

16 **Q.** All right. Under the DPLA, you say that the developer
17 gets access to a comprehensive suite of developer tools,
18 software, and other intellectual property; right?

19 **A.** Yes, ma'am.

20 **Q.** And you talked about Epic's use of APIs.

21 **Do you remember that?**

22 **A.** Yes, ma'am.

23 **Q.** And I think we established that Epic is one of maybe a
24 million developers of apps for the Apple iStore -- Apple App
25 Store?

1 **A.** One of a million entities that have executed the DPLA.

2 **Q.** Okay. How many developers currently have apps on the
3 Apple App Store? Do you know?

4 **A.** No. It's obviously a subset of the total because many
5 have multiple apps. We talked about --

6 **Q.** Sir, I'm just asking if you know the number. Do you?

7 **A.** I don't know the exact number.

8 **Q.** All right. Well, I'll agree with you it's less than a
9 million, but you don't know how much less?

10 **A.** Correct.

11 **Q.** Okay. Did you study any of the other less than a million
12 but more than one Epic's use of APIs in connection with your
13 work here --

14 **A.** You mean specific developer use?

15 **Q.** Sure.

16 **A.** No. My focus was on Epic.

17 **Q.** Okay. And Epic is one of, I think we can all agree, a
18 vast quantity of developers who develop apps for the App
19 Store?

20 **A.** I accept that.

21 **Q.** You talked a little bit about open source.

22 **Do you remember that?**

23 **A.** Yes, ma'am.

24 **Q.** Well, so you don't -- you don't think that Apple is
25 licensing open-source technology under the DPLA, or do you?

1 **A.** I don't offer an opinion in that regard. My work is
2 focused on the proprietary IP, not the open source.

3 **Q.** Okay. So the open source shouldn't be part of any of your
4 work here; right?

5 **A.** The patents I identified are inventions incremental to the
6 open-source technology.

7 **Q.** So in terms of, for example, WebKit, WebKit is one of the
8 technologies that's listed in your report; right?

9 **A.** It is.

10 **Q.** Okay. And you're aware that WebKit is open source?

11 **A.** Includes open source, sure.

12 **Q.** Okay. And same with Swift; right?

13 **A.** Many APIs include open source.

14 **Q.** All right. And you didn't do any analysis to disaggregate
15 what the value of WebKit is that's attributable to the
16 open-source aspects, as opposed to what you might call
17 proprietary aspects; right?

18 **A.** Well, "value" is a monetary term, so the answer is no, I
19 did not do that.

20 **Q.** Did you do any qualitative distinction between the
21 open-source portions versus the proprietary portions?

22 **A.** Only in totaling the proprietary portions, not
23 qualitatively putting them against each other.

24 **Q.** Okay. You just were talking about in terms of what you
25 just said, the number of patents that mention WebKit, for

1 example?

2 **A.** Or trademarks or copyrights, yes.

3 **Q.** Okay. But we're just talking about the number that
4 reference it.

5 **A.** Well, in part, true.

6 **Q.** But in terms of when you said -- when you answered my
7 question about qualitative analysis, you pointed to the
8 tallying of the pieces of IP that reference that technology;
9 right?

10 **A.** Meaning I focused on the Apple portion, not the
11 open-source portion.

12 **Q.** You agree that not all IP is protectable; right?

13 **A.** Sure. The most obvious example would be an expired
14 patent.

15 **Q.** Okay. Well, also -- well, let's just talk about APIs.

16 Do you agree that not every piece of code or API software
17 is protectable under the IP laws?

18 **A.** Yes.

19 **Q.** Okay. Some code, even if it is protectable, might still
20 be subject to fair use doctrine; right?

21 **A.** That's a legal principle, but I'm generally familiar and
22 it may, yes.

23 **Q.** Is that part of your certification process, understanding
24 that?

25 **A.** Well, I worked on matters where that was at the core, the

1 *Oracle/Google* case you mentioned being one.

2 **Q.** Yep. Okay.

3 So fair use -- not looking for a legal opinion, but fair
4 use -- your understanding is that if something qualifies for
5 that, it can be used by a third party without violating the
6 author's IP rights; right?

7 **A.** Consistent with the legal parameters of that finding, yes.

8 **Q.** And you are familiar with instances, right, in which
9 courts have declined to enforce an author's copyright claim on
10 code because enforcing that copyright would risk harm to the
11 public by limiting the future creativity of new programs;
12 right?

13 **A.** I'm aware of cases that address that issue, yes.

14 **Q.** And *Google vs. Oracle* in the Supreme Court is one of them;
15 right?

16 **A.** It is.

17 **Q.** You read that one?

18 **A.** I did.

19 **Q.** All righty.

20 And, in fact, the Supreme Court, you're familiar, did, in
21 fact, find that some of Oracle's APIs are subject to fair use?

22 **A.** I defer to the language, but, generally speaking, that's
23 my understanding.

24 **Q.** And you have not done any analysis here to determine
25 whether any of the APIs that Apple has and may or may not

1 license to developers are, in fact, subject to fair use;
2 right?

3 **A.** Correct.

4 **Q.** We talked a bit about freeriding.

5 Do you remember that?

6 **A.** I do.

7 **Q.** And I think you said that one of the requested reliefs
8 that caused you some concern is that it would force Apple to
9 allow stores within a store.

10 Do you remember that?

11 **A.** As an example, yes.

12 **Q.** You have not cited or offered any evidence that shows that
13 the reason Apple chose not to allow third-party app stores
14 within the Apple App Store was to protect its IP; right?

15 **A.** I'm sorry. Did I offer evidence -- can you restate that
16 question, please?

17 **Q.** Sure.

18 You have not offered any evidence or cited any evidence
19 that demonstrates that the reason why Apple prohibits stores
20 within a store was tied to protecting its IP; right?

21 **A.** I think that's true. My explanation was investment. Yes.

22 **Q.** You don't know that the prohibition on stores within a
23 store has anything to do with Apple trying to protect its
24 investment in IP?

25 **A.** No. I believe I do. I believe that testimony was

1 provided during this trial.

2 Q. Okay. You think Mr. Schiller said that?

3 A. I don't recall if he specifically said, but I think,
4 generally it's been discussed as to why Apple does not want to
5 have a store within a store and the repercussions that would
6 have on its ability to provide adequate security and other
7 elements of technology protected by IP.

8 Q. Okay. That's a different point.

9 Security is not IP protection, it's security; right?

10 A. But security tools are protected by IP.

11 Q. Yeah. I'm asking a very narrow question.

12 Set aside security. I'm asking if you have heard or have
13 any evidence that the reason Apple prohibits stores within a
14 store is in order to protect against freeriding on Apple's IP?

15 A. I believe that is true. I don't recall if they said it
16 directly or indirectly through their control. I don't know if
17 they used the word "IP."

18 Q. Okay. So if they didn't, it would be -- your only
19 evidence is if it happened in this trial in the live
20 testimony? You haven't seen any document; right?

21 A. I don't think it's a debatable point. I don't recall
22 specific testimony or documents, but I do believe that Apple
23 is concerned about its IP rights if it was subject to the
24 requested --

25 Q. Okay.

1 **A.** -- injunctions.

2 **Q.** So -- I'm not talking about the injunction right now --

3 **A.** Equitable relief.

4 **Q.** -- I'm talking -- I'm not talking about that either.

5 I'm talking about the justification for the prohibition

6 that exists right now that there can be no stores within a

7 store on Apple App Store.

8 Do you know that? That's a prohibition that exists today;

9 right?

10 **A.** Generally, yes. I understand that.

11 **Q.** Have you seen any evidence that the reason that
12 prohibition came into being was to protect Apple's IP rights?

13 **A.** Not specifically using your words --

14 **Q.** Okay. Thank you.

15 And, similarly, you do not have any evidence or documents
16 that show that the reason Apple chose not to allow sideloading
17 on iOS devices was to protect Apple's intellectual property
18 rights; correct?

19 **A.** No. The IP protects those features from happening.

20 You're --

21 **Q.** Sir --

22 **A.** -- phrasing the question in a very odd way.

23 **Q.** I'm phrasing it in the way I would like it answered. If
24 you can't answer it, I will move on.

25 But I'm just asking if you have seen any documents or any

1 evidence that shows and connects the no sideloading policy to
2 protection of Apple's IP, that that's the reason they have
3 that restriction.

4 Have you seen that?

5 **A.** I believe the -- yes. I can't tell you they use those
6 exact words, but I believe that Apple wants to protect its
7 investment -- its IP-protected investment by preventing those
8 activities.

9 **Q.** And you've seen references to their intellectual property
10 rights as opposed to security issues?

11 **A.** That's why I said I can't tell if they used those exact
12 words at the trial, but the substance is the same.

13 **Q.** I'm now -- not talking about trial; I'm now asking if
14 you've seen any documents.

15 Have you seen any documents?

16 **A.** Yes. Documents that talk about Apple protecting its
17 innovation through IP and having control over that, which
18 would include the licenses, the policy statement --

19 **Q.** I'm going --

20 **A.** -- the depositions.

21 **Q.** I'm going to try one more time and then I'll move on.

22 Have you seen -- other than your belief that they have
23 innovation, that they have patent protection -- I'm not
24 disputing that there are patents out there. I just want you
25 to understand. I'm just asking if you have seen anything that

1 says, I am going to -- I, Apple, am going to impose this
2 restriction on no sideloading on devices in order to make sure
3 that nobody takes advantage of my IP.

4 **A.** I can't recall a document so specific to that language.

5 **Q.** You also talked about what would happen on freeriding.
6 They would -- Apple would lose out on the negotiated-for
7 compensation.

8 Do you remember that?

9 **A.** Yes, ma'am.

10 **Q.** You know that Apple says that they don't negotiate their
11 compensation, though; right?

12 **A.** They do not negotiate the 30 percent, for example, with
13 developers individually, that's true.

14 **Q.** You've seen, I think you said, a thousand licenses in your
15 time?

16 **A.** At least.

17 **Q.** You would agree that royalty rate is a form of value that
18 sets a price at which licensors will allow others to use a
19 limited portion of their IP rights; correct?

20 **A.** Yes. That's a common definition.

21 **Q.** And a royalty is a way for Apple to get paid for its use
22 of IP; right?

23 **A.** It can be.

24 **Q.** And have you -- you said you saw the DPLA.

25 Have you seen Schedule II to the DPLA?

1 **A.** I have.

2 **Q.** And that sets forth a commission rate that developers must
3 pay; right?

4 **A.** For in-app purchases for having apps on the platform, yes.

5 **Q.** That's the only way Apple gets paid from people making
6 in-app purchases on the App Store; right?

7 **A.** True.

8 **Q.** Okay. Why don't we take a look at it. It should be the
9 same DX3370, I hope. And it's going to be -- I'm going to
10 turn your attention to .083.

11 **A.** I have it.

12 **Q.** Do you see in Section 3.4 that it says, "Apple shall be
13 entitled to the following commissions in consideration for its
14 services as your agent and/or commissionaire."

15 Do you see that?

16 **A.** Yes, ma'am.

17 **Q.** They don't use the word "royalty"; right?

18 **A.** Well, it's not a royalty.

19 **Q.** Okay.

20 You think that Apple can charge whatever commission it
21 wants, right, even up to 90 percent?

22 **A.** Theoretically a patent owner can charge whatever
23 commission the market will bear.

24 **Q.** Yeah.

25 **A.** 90 percent --

1 Q. I'm asking --

2 A. -- is an extreme example, but theoretically.

3 Q. Okay.

4 So Apple, in your view, is not restricted from charging 90
5 percent commission; right?

6 A. Well, that's an extreme hypothetical. I haven't studied
7 whether there would be any market or other restrictions
8 associated with such an extreme rate.

9 Q. Okay.

10 You agree that there's a limited period of exclusivity
11 associated with the intellectual property grant; right?

12 A. It depends upon the intellectual property. There is no
13 limit for trade secrets, for example. There is a 20-year
14 limit, essentially, for patents.

15 Q. And you didn't itemize trade secrets because they are not
16 publicly available; right?

17 A. They are secret.

18 Q. Right. So those aren't part of your analysis.

19 A. Correct. My analysis is understated or conservative by
20 not considering those.

21 Q. And is it your position that the trade secrets are being
22 licensed by the DPLA?

23 A. They can be. In fact, in the interchange between --

24 Q. Are they being licensed under the DPLA or -- yes?

25 A. Yes. They can be, yes.

1 Q. Are they?

2 A. It depends upon the need of the developer.

3 Q. Okay. And there is no time limit in the DPLA for how long
4 Apple gets commissions; right?

5 A. I believe that's correct.

6 Q. You talked about the IP guidelines.

7 A. I did.

8 Q. And you have even quoted a few parts with your counsel;
9 right?

10 A. As well as in my report, yes.

11 Q. But you agree and understand that those IP guidelines
12 specifically say that exercise of intellectual property rights
13 are not free from scrutiny under the antitrust laws; right?

14 A. Absolutely agree, yes.

15 Q. Certain types of conduct with respect to intellectual
16 property may have anticompetitive effects that the antitrust
17 laws can and do protect; right?

18 A. Yes, ma'am.

19 Q. And, in fact, restrictions in licensing agreements can
20 harm competition?

21 A. It's possible.

22 Q. And you're not offering any opinion here as to whether any
23 of Apple's restrictions are or are not anticompetitive; right?

24 A. Correct.

25 Q. Are you aware as to whether courts can reject the

1 justification from a company saying that they are taking
2 action to protect intellectual property as pretext if there is
3 no evidence that the firm's restrictive conduct was actually
4 motivated by its desire to protect its IP?

5 **A.** I think there are cases that address such, and one of the
6 examples in the guideline addresses that.

7 **Q.** Right. And *Kodak* is the case you might be thinking of --

8 **A.** It is.

9 **Q.** -- as one example?

10 **A.** As an example.

11 **MS. MOSKOWITZ:** Okay. Your Honor, I pass the
12 witness.

13 **THE COURT:** Redirect.

14 And, Ms. Forrest, your team, my rough estimate, has 3
15 hours and 10 minutes left in this trial.

16 **REDIRECT EXAMINATION**

17 **BY MR. DOREN:**

18 **Q.** Hello, Mr. Malackowski.

19 **A.** Hello.

20 **Q.** Could I please ask you to turn back to DX3900, which is
21 the DPLA.

22 **A.** Yes, sir.

23 **Q.** First of all, are you familiar with something called a
24 portfolio license?

25 **A.** I am.

1 Q. And what is the DPLA?

2 A. It would be more in the order of a portfolio as opposed to
3 a patent-specific license.

4 Q. And can you describe for the Court, please, what a
5 portfolio license is?

6 A. Yes, Your Honor. It's what I was alluding to in
7 cross-examination, that some patent agreements are
8 asset-specific, so you're licensed to these patents, these
9 trademarks, and they're identified; and others are portfolio
10 licenses which you are licensed to the IP that suits your
11 application or your need across anything in our portfolio.

12 Q. And what is your understanding, based on your review of
13 the DPLA, as to whether or not it is a portfolio license?

14 A. It is.

15 Q. And what is the utility of having a portfolio license as
16 opposed to a -- one that enumerates specific patents within
17 it?

18 A. Well, there is a practical and a substantive utility.

19 The practical utility is the IP assets vary almost daily
20 as new patents are issued or some are expired.

21 The substantive benefit is that your licensing partners
22 know that they are not going to be restricted in whatever they
23 develop because you will say, Well, that's not included. So
24 they have a broader right or access to your entire portfolio.

25 Q. And, in fact, this is a portfolio -- or excuse me -- this

1 is a license that remains in place over time; is that true?

2 **A.** It is.

3 **Q.** And, therefore, what is the more practical approach to
4 licensing IP as it, too, evolves over time?

5 **A.** Most agreements --

6 **MS. MOSKOWITZ:** Objection, leading.

7 **THE WITNESS:** -- the portfolio --

8 **THE COURT:** It is leading.

9 **BY MR. DOREN:**

10 **Q.** In that context, sir, what does the -- does a portfolio
11 license have any particular utility?

12 **A.** Yes. I would say, in fact, the majority of ongoing
13 cooperative license agreements between parties are
14 portfolio-based for that reason, that you tend to find
15 asset-specific licenses more in the resolution of a dispute or
16 for a historical issue.

17 **Q.** And, sir, when -- on direct, I asked you -- and I will now
18 ask you again -- among the things that Apple seeks under the
19 DPLA in return for the license, you identified two particular
20 things.

21 Can you remind us what those were?

22 **A.** Yes. They were, first, the app review process, that you
23 have to submit your application developed with Apple's IP to
24 their review; and then, second, if it's determined that it can
25 be distributed, it must be distributed on the App Store, on

1 the platform.

2 Q. And if I could ask you to look, please, at the first page
3 of Exhibit DX3900, and in particular, the first paragraph on
4 the first page under the bold heading "Purpose."

5 A. Yes, sir.

6 Q. And could you please read that paragraph to us.

7 A. First paragraph, "Purpose. You would like to use the
8 Apple software as defined below to develop one or more
9 applications as defined below for Apple-branded products.
10 Apple is willing to grant you a limited license to use the
11 Apple software and services provided to you under the program
12 to develop and test your applications on the terms and
13 conditions set forth in this agreement."

14 Q. And, sir, you were asked earlier whether you were aware of
15 any indication in the DPLA that it was intended to protect
16 Apple's intellectual property.

17 Do you recall that?

18 A. Yes, sir.

19 Q. How do you view this first paragraph in the first page
20 under the bold heading "Purpose"?

21 A. Well, it essentially sets forth the understanding that we
22 are talking about Apple's proprietary assets, and the purpose
23 of the agreement is to facilitate that sharing or permission
24 to use them, but they're Apple's assets.

25 Q. And, sir, you described in direct your analysis of Apple's

1 intellectual property portfolio.

2 And can you remind us, please, what the first step in that
3 was.

4 **A.** First step was to look to research and development
5 investment before looking to the actual patents.

6 **Q.** And was there a step at which you narrowed the Apple IP to
7 that related to the iOS ecosystem?

8 **A.** Yes. So I began by looking at all of Apple's IPs, some
9 25- to 30,000 patent assets, for example. Second step was to
10 narrow that to the iOS ecosystem, 3500 to 4,000 patents. And
11 then there was a third step to narrow it further to Epic.

12 **Q.** And we looked at conclusions that you had reached
13 regarding patents and other intellectual property protections
14 related to iOS, the App Store, and developer tools, each
15 category broadly.

16 Do you recall that?

17 **A.** I do.

18 **Q.** And were any of those findings specific to Epic?

19 **A.** No. That would be the third level, where there was Epic's
20 level findings.

21 **Q.** And do you recall when you were shown a spreadsheet
22 related to API -- excuse me, pardon me -- to patents that
23 related to the App Store?

24 **A.** I do.

25 **Q.** And you testified in general about whether or not you

1 would have included most design patents on that; correct?

2 **A.** I do.

3 **Q.** And what was your intent regarding the inclusion of design
4 patents within, for example, the category for the App Store?

5 **A.** Absolutely to include them. I specifically call out
6 design patents in my summary as distinct from utility patents.

7 **Q.** And you were shown, sir -- and I hate to make you switch
8 binders, but in the large black binder, you were shown a
9 document marked PX1182, which is "Graphical user interface for
10 a display screen or a portion thereof"; correct?

11 **A.** Yes, sir.

12 **Q.** And did you and your team conclude that this was relevant
13 to the App Store?

14 **A.** Absolutely. And I stand by that today.

15 **Q.** And why is that?

16 **A.** Aside from saying that it is is because when you look at
17 it, it is specifically addressing the design of the display of
18 the App Store on the iPhone and related applications.

19 **Q.** And, sir, you were also shown PX1183.

20 Do you recall that?

21 **A.** Yes, sir.

22 **Q.** And that patent was identified as "System for determining
23 the quality of sleep."

24 Do you recall that?

25 **A.** I do.

1 Q. And you were shown a sentence regarding prior art and
2 being present and publicly available in the Apple iOS App
3 Store.

4 Do you recall that?

5 A. I do.

6 Q. So, first of all, sir, would an improvement in the ability
7 of the iPhone to administer systems for determining the
8 quality of sleep have any impact on app developers?

9 A. Yes. It would provide them additional Toolkit to use if
10 they wanted to address that issue in their apps.

11 Q. So would this be an example, sir, of intellectual property
12 patented by Apple that is not specific to Epic?

13 A. Correct.

14 Q. And if you could look, please, sir, at Column 16 on page
15 .19 of that patent.

16 A. Yes, sir.

17 Q. And if you look at the neighborhood of line 15.

18 A. Yes, sir.

19 Q. And you see the statement, "Using the mobile phone" -- it
20 says, "Communicating the body motion signal from the
21 peripheral device to the mobile phone; and -- and using the
22 mobile phone to: Determine respiration amplitudes from the
23 body motion signal; detect a change in the body motion signal
24 in a given window of time; detect an increase or an absence of
25 an increase in a respiration cycle" -- and so on and so forth.

1 Do you see that?

2 A. I do.

3 Q. In your opinion, sir, does this patent have relevance to
4 app developers?

5 A. Absolutely without question.

6 Q. How so?

7 A. It is describing an invention that they may use if they
8 wish to take to advantage the gyroscope feature, essentially,
9 of the phone.

10 Q. Now, sir, you produced your spreadsheets of all the
11 patents that were included in all the counts that you
12 testified about here today; correct?

13 A. Yes, sir.

14 Q. And how long ago did you produce those?

15 A. With my report prior to my deposition, so weeks, if not
16 months, ago.

17 Q. And you were shown two patents here today by plaintiff's
18 counsel; is that right?

19 A. Yes, sir.

20 Q. Mr. Malackowski, there was a discussion at the beginning
21 of your testimony about some prior cases in which the court
22 evaluated *Daubert* motions regarding your testimony.

23 Do you recall that segment of your examination?

24 A. I do.

25 Q. And, first of all, sir, do you -- are many of the cases

1 that you testify in patent cases?

2 **A.** Yes, sir.

3 **Q.** And in your professional experience, how often are *Daubert*
4 motions filed against experts in patent cases?

5 **A.** In the level of case that I'm engaged in, *Daubert* motions
6 are essentially filed in every case against every expert.

7 **Q.** And, sir, how many times have you testified?

8 **A.** I have provided trial testimony more than 50 times, more
9 than 200 depositions.

10 **Q.** Thank you.

11 Let's look at a couple of the specific cases that counsel
12 referenced.

13 The first was one called *Acantha v. Depuy*.

14 Do you remember that?

15 **A.** I do.

16 **Q.** From the Eastern District of Wisconsin in 2018.

17 Do you recall why your opinion was excluded in that case?

18 **A.** Yes.

19 Your Honor, in that case, one of the licenses, the
20 original patent holder had signed an exclusive license with a
21 third party, and so there was an issue as to whether that
22 exclusive licensee would be the hypothetical negotiator of the
23 royalty because he had the rights at the time or whether it
24 should revert back to the patent owner.

25 The judge excluded my reliance and, therefore, any opinion

1 that stemmed from my view that they should be included.

2 Q. And were you precluded from testifying at all in that
3 case?

4 A. No. I testified; I just didn't testify to that particular
5 license.

6 Q. And, sir, you were also asked about *Prism vs. AT&T*.

7 Do you remember that?

8 A. I do.

9 Q. And that was a case from the District of Nevada back in
10 2014.

11 Do you recall that?

12 A. I do.

13 Q. And why -- was your opinion, in fact, excluded in that
14 case?

15 A. In the first of the series, yes.

16 Q. And why was that?

17 A. That was a time when the apportionment standard for patent
18 infringement cases was evolving, and so I presented an
19 analysis that was based on the cost savings of the technology.
20 And the judge said, Clearly, this has never been used before,
21 which was correct, and then precluded me.

22 But by the time the second case came around, it was now
23 used frequently, and so I was let back in.

24 Q. And, sir, was this one of a series of cases presenting the
25 same issue?

1 **A.** It was.

2 **Q.** And just to make sure I understand your testimony, you
3 were precluded in 2014 on that particular opinion; is that
4 right?

5 **A.** That's right.

6 **Q.** Have you offered that same particular opinion in the
7 subsequent cases in that same courthouse?

8 **A.** Same court, same judge, same methodology. It was -- I
9 ultimately was shown to be correct.

10 **Q.** And *Rembrandt Social Media* was another case that counsel
11 brought up.

12 Do you recall that?

13 **A.** I do.

14 **Q.** That was the case that you spent the longest time
15 discussing with counsel.

16 Do you recall that?

17 **A.** I do.

18 **Q.** And that case is out of the Eastern District of Virginia
19 in 2013.

20 Do you remember that time frame?

21 **A.** Yes, sir.

22 **Q.** And why was your opinion excluded in that case?

23 **A.** Well, that was the same time period as the *Prism* case, the
24 same issue of the evolving standards for apportionment.

25 In that case, I had relied upon a survey to do the

1 appportionment, and the judge said it was a first time we were
2 serving -- surveying all the way down to elements of the
3 patent claim, recognized that was a matter of first
4 impression, actually certified the *Daubert* ruling for
5 interlocutory appeal, recognizing it was a first time, and
6 then it went up to the Fed Circuit.

7 Q. And, sir, what happened between the time that the court
8 granted interlocutory appeal and the end of the case?

9 A. The case resolved itself.

10 Q. And so, again, just to make sure I understand, it was the
11 exclusion order, the order excluding your testimony, that
12 prompted the interlocutory appeal?

13 A. I believe that was the sole focus of the appeal.

14 Q. And that was an appeal certified by that federal judge?

15 A. It was.

16 Q. And let's look, if we can, please, sir, lastly at *Oracle*
17 *vs. Google* out of the Northern District of California in 2016.

18 Do you recall that case?

19 A. Yes. That's the one that went to the Supreme Court.

20 Q. Okay. And why -- and was your testimony precluded in that
21 case?

22 A. Only a portion of it, not the substance of the testimony.

23 Q. And other than the time that you've spent before this
24 Court in past matters, how many other times have you testified
25 as an expert in the Northern District of California?

1 **A.** I think eight times have actually gone to trial.

2 **Q.** And, sir, very briefly on fair use, do you know whether
3 the question of fair use of a copyright is a fact-specific
4 inquiry?

5 **A.** It is. It's very much case specific.

6 **Q.** And you did not specifically analyze whether any of
7 Apple's IP is subject to a fair use; correct?

8 **A.** Correct.

9 **Q.** And, finally, sir, have you been retained on other matters
10 by Epic's counsel in this case?

11 **A.** Cravath?

12 **Q.** Yes.

13 **A.** Yes. I have a lot of respect for Cravath.

14 **Q.** And have you been retained by Cravath on a variety of
15 other matters over the years?

16 **A.** Yes, sir.

17 **Q.** Are you ever invited to speak at firm summits on
18 intellectual property?

19 **A.** At Cravath summits?

20 **Q.** Yes, sir.

21 **A.** Yes, I have.

22 **Q.** And can you tell us who the audience is at those summits?

23 **A.** It is Cravath partners and associates, their clients,
24 academics, judges often, industry professionals.

25 **Q.** And when was the last time you spoke at that summit?

1 **A.** I think they invited me to their inaugural summit as a
2 speaker. I participated in workshops subsequent, and I
3 usually go every year. Last year was suspended because of
4 COVID, I believe.

5 **Q.** And have you --

6 **A.** I hope I get invited back again, since you are asking
7 these questions.

8 **Q.** Have you been retained by Cravath on matters since these
9 exclusion orders that we've just discussed?

10 **A.** Yes.

11 **MR. DOREN:** Pass the witness, Your Honor.

12 **THE COURT:** Six topics, so recross limited to that
13 scope.

14 **MS. MOSKOWITZ:** Thank you. I won't say the number of
15 questions, but I can say it's only one of those topics.

16 **RECROSS-EXAMINATION**

17 **BY MS. MOSKOWITZ:**

18 **Q.** The *Rembrandt* case --

19 **A.** Yes.

20 **Q.** -- that you talked about, and you talked about it being
21 certified for appeal?

22 **A.** Yes.

23 **Q.** You're aware that the Federal Circuit rejected the
24 interlocutory appeal on your damages issue; right?

25 **A.** There was another case on the same issue at the same time,

1 and they resolved it in that case. Yes.

2 **Q.** Your exclusion -- the petition for interlocutory appeal of
3 the exclusion of your opinion was rejected by the Federal
4 Circuit; correct?

5 **A.** Yes.

6 **MS. MOSKOWITZ:** No further questions.

7 **THE COURT:** Anything on that?

8 **MR. DOREN:** May as well, Your Honor.

9 **REDIRECT EXAMINATION**

10 **BY MR. DOREN:**

11 **Q.** Mr. Malackowski, do you have an understanding as to
12 whether or not the issue that your trial judge in *Rembrandt*
13 certified was subsequently resolved by the Federal Circuit?

14 **A.** Yes. There was -- shortly after my case was submitted,
15 there was a ruling from the Federal Circuit that dealt with
16 the same apportionment issue, making my motion moot, in my
17 opinion.

18 **MR. DOREN:** Thank you, sir.

19 No further questions, Your Honor.

20 **MS. MOSKOWITZ:** Nothing further, Your Honor.

21 **THE COURT:** All right. You may step down, sir.

22 **THE WITNESS:** Thank you, Your Honor.

23 **THE COURT:** Thank you.

24 Okay. We have ten minutes. Next witness.

25 Ms. Moskowitz, all of those exhibits that you are talking

1 about, none of those are in evidence and none of them are on
2 the stipulation. I just want to make sure you didn't want
3 them in evidence.

4 **MS. MOSKOWITZ:** I think I do want some of them in
5 evidence, Your Honor. Can I hand up a list? Can I make a
6 list --

7 **THE COURT:** So I --

8 **MS. MOSKOWITZ:** -- and share it with counsel?

9 **THE COURT:** I have the list. Let's just -- maybe
10 this will end up being the last thing, Mr. Doren.

11 What I had is -- well, there are the patents and then
12 there are the case cites. I don't know if we need the case
13 cites. 1175 is a case. 1176 was a case.

14 **MS. MOSKOWITZ:** Your Honor, if you're not inclined to
15 take the cases, I don't think we need to offer them. They're
16 certainly something we can cite in argument.

17 **THE COURT:** And then 3370 --

18 **MS. MOSKOWITZ:** I believe that one was in, if I'm not
19 mistaken.

20 **MR. DOREN:** Is that another --

21 **MS. MOSKOWITZ:** That was the DPLA.

22 **MR. DOREN:** That was DPLA, I think.

23 **THE COURT:** That must be another version of it.

24 **MS. MOSKOWITZ:** Oh, I see.

25 **THE COURT:** Okay. So I'll admit it to the extent

1 it's not.

2 (Defense Exhibit DX3370 received in evidence)

3 **THE COURT:** 1182 was a design patent.

4 No objection?

5 **MR. DOREN:** None here, Your Honor.

6 **THE COURT:** That's admitted.

7 (Plaintiff's Exhibit PX1182 received in evidence)

8 **THE COURT:** 5547 I think was another patent.

9 **MS. MOSKOWITZ:** The spreadsheet. I believe that's
10 already in.

11 **THE COURT:** It's not. So I'll admit that.

12 **MS. MOSKOWITZ:** Okay. Thank you.

13 (Plaintiff's Exhibit PX5547 received in evidence)

14 **MR. DOREN:** Thank you, Your Honor.

15 **THE COURT:** 1182, that was a patent -- 1183, I'll
16 admit that. That was a patent.

17 (Plaintiff's Exhibit PX1183 received in evidence)

18 **MS. MOSKOWITZ:** Thank you.

19 **THE COURT:** That may have been -- that was it.

20 **MS. MOSKOWITZ:** Okay. Thank you, Your Honor.

21 **MR. DOREN:** Thank you.

22 **THE COURT:** Thank you.

23 Okay. Let's get him sworn in -- or do you have a witness?

24 **MR. LO:** Good morning, Your Honor -- or good
25 afternoon, Your Honor. For our next witness, Apple calls

1 Aviel Rubin.

2 **THE COURT:** Okay.

3 **AVIEL RUBIN,**

4 called as a witness for the Defendant, having been duly sworn,
5 testified as follows:

6 **THE WITNESS:** I do.

7 **THE CLERK:** Okay. Please be seated. And then make
8 sure the mic is directed under the shield, and then please
9 state your full name and spell your last name.

10 **THE WITNESS:** My name is Aviel David Rubin,
11 R-U-B-I-N.

12 **THE COURT:** Okay. We are just going to go through
13 the preliminaries.

14 Go ahead, Mr. Lo.

15 **MR. LO:** Thank you, Your Honor.

16 May I pass up some binders?

17 **THE COURT:** You may.

18 I said you may proceed.

19 **MR. LO:** Thank you, Your Honor.

20 **DIRECT EXAMINATION**

21 **BY MR. LO:**

22 **Q.** Dr. Rubin, would you please introduce yourself to the
23 Court, please.

24 **A.** Yes. Hi, my name is Avi Rubin. I'm a computer science
25 professor at Johns Hopkins University, and I'm the technical

1 director of our Information Security Institute.

2 **MR. LO:** And if I could ask Mr. Eltiste to put up
3 Slide No. 2.

4 **THE CLERK:** Hang on. I have to switch it over. Here
5 we go.

6 **MR. LO:** No problem.

7 **THE CLERK:** Okay.

8 **BY MR. LO:**

9 **Q.** And while that is coming up, Dr. Rubin, could you give us
10 a brief summary of your background.

11 **A.** Yes. So I got all my degrees in computer science and
12 engineering from the University of Michigan, the last one
13 being my Ph.D. in 1994.

14 After grad school, I went to work at Bellcore and then
15 AT&T Labs as a research scientist. I spent nine years in
16 industry and then moved to Hopkins to be a professor. I've
17 been a professor at Johns Hopkins starting in 2003, and, as I
18 mentioned, I'm also the technical director of our Information
19 Security Institute.

20 I founded two companies, Independent Security Evaluators
21 and Harbor Labs, where I now also play the role of chief
22 scientist.

23 **Q.** And, Dr. Rubin, in terms of your professional work, do you
24 have specific areas of focus?

25 **A.** Yes. My work is in computer and network security and more

1 broadly, computer science.

2 Q. In your binder, sir, please turn to DX4880.

3 A. Okay.

4 Q. Do you recognize DX4880?

5 A. Yes. This is my CV.

6 Q. Okay. And is it accurate, to the best of your knowledge?

7 A. Yes.

8 Q. All right.

9 MR. LO: Your Honor, we seek to admit DX4880.

10 MR. BYARS: This is Brent Byars for Epic. I believe
11 it was subject to the stipulation, so no objection.

12 THE COURT: Admitted.

13 (Defense Exhibit DX4880 received in evidence)

14 MR. LO: And, Your Honor, while we are on that
15 subject, with respect to Dr. Rubin's written direct and the
16 exhibits that are subject thereto, those are all going to be
17 part of the stipulation, so we will provisionally move those
18 into evidence, subject to the parties' usual methods here.

19 THE COURT: All right. Admitted provisionally.

20 MR. LO: Mr. Eltiste, would you put up Slide No. 3.

21 BY MR. LO:

22 Q. Dr. Rubin, what were you asked to do in this case?

23 A. In this case, I was asked to look at Apple's app review
24 process, including the human manual review, as well as the
25 centralized App Store distribution, and then to determine

1 whether or not it has an impact on security and, if so, what
2 impact, where security includes privacy, reliability, and
3 trustworthiness.

4 **Q.** Okay. And were you asked to do anything else?

5 **A.** Yes. I was asked to look for real-world data for studies
6 when forming my opinions.

7 **MR. LO:** Okay. And, Mr. Eltiste, if you could put up
8 Slide No. 4.

9 **BY MR. LO:**

10 **Q.** And while he is doing that, Dr. Rubin, did you reach any
11 conclusions in this case?

12 **A.** Yes, I did.

13 **Q.** Okay. And what were they, at a high level?

14 **A.** I concluded that Apple's App Store review, with the human
15 manual review and the centralized app distribution model,
16 offers significant security benefits to iOS and results in
17 lower infection rates on phones, as well as a lower volume of
18 malicious or untrustworthy apps in the App Store.

19 **Q.** Okay. And we'll get into it in a little bit more detail,
20 but just briefly, what's the difference between saying lower
21 infection rates and lower volumes of -- of those types of
22 apps?

23 **A.** Sure. So the lower infection rates has to do with the
24 actual infection on a device, so if a phone has a piece of
25 malware on it, it's been infected; whereas lower volume of

1 malicious apps means that these apps that can potentially
2 infect a device are -- are in the App Store.

3 **MR. LO:** Okay. And maybe we'll do one more thing,
4 and, Mr. Eltiste, if you could put up Slide No. 5.

5 **BY MR. LO:**

6 **Q.** Dr. Rubin, you've said the word "security" a couple of
7 times already.

8 For the purposes of your work in this case, what do you
9 mean when you say "security"?

10 **A.** In this case, I took a broad look at security, and I look
11 at security as dealing with an adversary. That means there is
12 somebody bad who wishes to cause harm.

13 And there are many different things that can cause
14 security issues. One of the big security issues is safety.
15 Safety has to do with making sure that malicious code isn't
16 running on a device and isn't able to do any harm to a device
17 if it does run on a device.

18 "Privacy" is a term that we're all familiar with. It has
19 to do with protecting confidential information, such as your
20 medical records and your location and all of the information
21 that really belongs only to you.

22 "Reliability" has to do with knowing that your device will
23 work when you need it. For example, if you have an emergency
24 and you need to call 911, you don't want an app with malware
25 to prevent you from being able to do that. Another quick

1 example is if you're driving down the street late at night,
2 your car breaks down, you're like, Okay, well I have a phone,
3 and you try to call for help and the phone doesn't work
4 because of some malware on it.

5 And the last one, "trustworthiness," has to do with your
6 confidence that all of the security properties are going to be
7 there, that your device is going to be able to protect you,
8 your information, etc.

9 **Q.** Thank you.

10 **THE COURT:** Okay. It's a short introduction.

11 We will stand in recess until 1:15. Thank you.

12 (Recess taken at 12:35 p.m.)

13 (Proceedings resumed at 1:17 P.M.)

14 **THE CLERK:** Remain seated. Court is in session.

15 Come to order.

16 **THE COURT:** Okay. We are back on the record.

17 I see Mr. Doren at the podium. Mr. Doren.

18 **MR. DOREN:** Thank you, Your Honor.

19 The rebuttal witness issue that we spoke about earlier
20 this morning appears to have ripened. At 10:34 a.m. as I was
21 standing at the podium preparing to resume my examination of
22 Mr. Malackowski, Ms. Forrest orally informed me that Epic
23 intended to call Shaan Pruden, a current Apple employee,
24 tomorrow. And at 11:16 we received -- or 10:45 we received an
25 email with that notice, at 11:16 an emailed trial subpoena

1 which we have not accepted service of.

2 We were told this morning at 8:00 a.m. that the rebuttal
3 witness would be a third party, that we would have a chance to
4 depose them, that it would depend on whether what happened
5 today with the witnesses, that it was based in part on a
6 redlining in our findings of fact, and it does not appear that
7 any of that has come to pass.

8 Your Honor, our agreement was that notice of rebuttal
9 witnesses would be provided by 7:30 a.m. the day before. This
10 was intentionally and provocatively several hours late, after
11 misleading statements made, after the deadline had already
12 been blown. And, Your Honor, no rebuttal witness for which we
13 received notice after 7:30 a.m. this morning should be
14 permitted.

15 **MS. FORREST:** Well, Your Honor, I -- I'm sorry to --
16 that we are at a point where words like "misleading" and
17 "intentionally misleading" are now being used. I would have
18 hoped that we would have been at a different point.

19 Let me just start by saying that the information this
20 morning related -- about whether or not the current witnesses
21 who were going on today would impact the rebuttal witnesses
22 had to do with two previously noticed rebuttal witnesses,
23 Dr. Lee and Ms. Mathiowetz. Dr. Lee is somebody who's a
24 security expert and he would directly respond to Dr. Rubin,
25 hence that's why -- that was the witness to which I was

1 referring. Apple has long been on notice of him.

2 Ms. Mathiowetz related to Mr. Hansen's. So I was not in
3 any --

4 **THE COURT:** This morning you talked about a -- what
5 you told me specifically related to a striking -- or a --
6 something that Apple had done in its findings of fact.

7 **MS. FORREST:** Yeah, and now I will -- I wanted to now
8 get to that because what I first wanted to do was address the
9 idea that somehow it related to the witnesses of today. That
10 had to do with Mathiowetz and Lee, not with this other person.

11 With what happened was in Apple's findings of fact
12 number 53 --

13 **THE COURT:** All right. What docket number? Do I
14 have it on the docket?

15 **MS. FORREST:** I don't know the docket number of their
16 findings of fact.

17 **THE COURT:** Oh, wait. Well, I can tell you.
18 Actually --

19 **MS. FORREST:** The --

20 **THE COURT:** -- I got them this morning. Hold on.

21 (Pause in the proceedings.)

22 **THE COURT:** I thought I got them this morning.

23 **MS. FORREST:** It was also sent yesterday at 3:15,
24 Your Honor, by email to chambers.

25 (Pause in the proceedings.)

1 **MS. FORREST:** And I can describe the issue, Your
2 Honor.

3 **THE COURT:** All right. Go ahead. I'm not finding it
4 quickly.

5 **MS. FORREST:** Your Honor, the issue has to do with
6 IAP. And there had previously been in the findings of fact of
7 Apple that IAP was introduced in 2009, a fact which no one
8 really contested.

9 What was new was, as you may have seen, there was back and
10 forth with Mr. Schiller as to whether or not there was the
11 ability for in-app commerce opportunities prior to the launch
12 of the IAP functionality.

13 The importance of that is if there was an opportunity for
14 developers to have had the ability to have offered in-commerce
15 opportunities before IAP launched, then the launch of IAP
16 would have effectively increased the cost to the developers of
17 those in-commerce opportunities.

18 We introduced a number of documents which we believed
19 showed that IAP, after Mr. Schiller for the first time
20 testified that IAP had not been possible, an in-commerce
21 opportunity had not been possible prior to 2009, I introduced
22 several documents to try and refresh his recollection that, in
23 fact, a number of entities had utilized in-commerce
24 opportunities prior to the launch of IAP.

25 He then disagreed also with Mr. Forstall's testimony,

1 which we then played in court, who said that IAP in-commerce
2 had been available.

3 Ms. Pruden, we've pulled up now, we've got 20 documents.
4 And if they want to stipulate to the documents, we don't have
5 to call the witness. They're business records. We'd be
6 perfectly happy to have the documents simply come in. Are
7 dated in the prior to the launch of IAP in November of 2009 or
8 whatever the date is, March of 2009. And we just want her to
9 authenticate those documents to demonstrate the in-commerce
10 use by developers prior to the launch of the functionality of
11 IAP, that they were doing that. That's the only purpose for
12 Ms. Pruden. It would be 15 minutes.

13 If they will stipulate to those documents coming in, Your
14 Honor, we need not call her.

15 **MR. DOREN:** Your Honor, in the original draft
16 findings of fact, we stated in September 2009, Apple
17 introduced in-app purchase IAP functionality which had not
18 previously been available. And we've -- and Mr. Schiller was
19 off the stand two days ago. He was crossed. He was crossed
20 on documents related to this issue. The Court can evaluate
21 this issues.

22 This is the first time I'm hearing any justification or
23 explanation for the notice that we received at 10:30 this
24 morning regarding Ms. Pruden, and I would suggest that I, at
25 least, was misled to think that any discussion about taking

1 depositions of third-party rebuttal witnesses this morning had
2 anything to do with the two previously deposed experts. This
3 is sandbagging, pure and simple.

4 They've had a chance to cross-examine the witness that
5 testified that way. They had a chance to put their documents
6 in the record. They had a chance to put those documents in on
7 their exhibit list. They had a chance to use Ms. Pruden's
8 deposition designations, which they did use for other purposes
9 in putting the -- the record before this Court. Now is not
10 the time for them to be attempting to kick this door open.
11 It's not rebuttal. Notice is late. It shouldn't be allowed.

12 **MS. FORREST:** Your Honor, this is absolutely not
13 misleading. And --

14 **THE COURT:** But it -- it may be late. So this is --

15 **MS. FORREST:** It's --

16 **THE COURT:** -- what we're going to do. This is what
17 we're going to do.

18 You're going to give me documents. And I'm going to go
19 back and I'm going to look at the proposed findings of fact.
20 And you can give me one page about where to look for things.
21 So tell me what finding of fact you think was misleading and
22 on which you were not on notice.

23 Mr. Schiller testified for multiple days, the last of
24 which was May 17th which was three days ago.

25 **MS. FORREST:** Your Honor, in the meantime, may I just

1 sort of -- I want clear up something.

2 We were actively interviewing third-party developers in
3 different parts of the country who had in fact offered
4 in-commerce opportunities. We -- that was the issue about
5 whether or not they were going to depose somebody.

6 We thought we had located one. We realized we could do it
7 through the documents and not inconvenience somebody flying
8 during a pandemic across the country. That was what I was
9 referring to this morning. This was not sandbagging --

10 **THE COURT:** So --

11 **MS. FORREST:** -- it was not misleading.

12 **MR. DOREN:** All I'm hearing, Your Honor, is they
13 could have told us this morning or last night or two days ago
14 that they may want to call Ms. Pruden and we should be
15 prepared for that, and they didn't.

16 **MS. FORREST:** Your Honor, these are all business
17 records. The reason that there is such vehemence is because
18 that is a critical issue in this case.

19 **THE COURT:** If it was so critical, right, if it was
20 so critical, you should have been prepared for it.

21 Hold on.

22 And I -- and I think that there was some preparation.
23 What I haven't seen is what you claim the -- I don't have in
24 front of me what you each have in front of you.

25 I understand you were dealing with this issue with

1 Mr. Schiller. I could see it on the 17th and on the 14th. I
2 knew where you were going. So clearly you knew it was an
3 issue --

4 **MS. FORREST:** Your --

5 **THE COURT:** -- on the 14th and on the 17th.

6 It is an issue that I've highlighted that I have to figure
7 out.

8 So, one, I don't know if Apple's trying to hide anything.
9 And, two, I don't know if you just didn't have the documents
10 in front of you or if you're so shocked at their -- at their
11 response.

12 Let me just say I cannot resolve it this second. I will
13 enforce the order so we will not have any rebuttal witnesses.
14 At most, I'll allow the documents in. That's what I will do
15 at most.

16 **MR. DOREN:** And, Your Honor --

17 **THE COURT:** No rebuttal witnesses.

18 **MR. DOREN:** And to be clear, Your Honor, we have not
19 yet seen the documents either.

20 **THE COURT:** Okay.

21 **MS. FORREST:** Your --

22 **THE COURT:** Get me the documents. Get him the
23 documents. And let me evaluate them.

24 **MR. DOREN:** Thank you, Your Honor.

25 **MS. FORREST:** Understood, Your Honor.

1 And since they are business records, I assume that
2 Mr. Cook could also get them in tomorrow.

3 And let me --

4 **THE COURT:** Well, frankly, there's your opportunity.

5 **MS. FORREST:** All right.

6 **THE COURT:** I --

7 **MS. FORREST:** And one other thing, Your Honor, just
8 so that -- because my credibility is very important to me. I
9 want to make it clear that when Mr. Schiller was testifying
10 and denied what we thought was an obvious point where
11 Mr. Forstall had actually obviously testified affirmatively to
12 it. I had people running to the other room to grab the
13 documents, which was why they were not in the binder. It
14 wasn't something that was planned and in binders and all
15 there. We were in realtime grabbing those documents to try to
16 cross Mr. Schiller.

17 So I just want to assure Your Honor that it was not as if
18 I'd been preparing for two days for that cross-examination
19 module. It came as a surprise to me that he would deny it so
20 vehemently.

21 **THE COURT:** Okay.

22 **MR. DOREN:** And just one closing note, Your Honor,
23 Mr. Schiller said the exact same thing in his deposition.

24 **THE COURT:** All right. Well, all right.

25 All right. Mr. Lo.

1 **MR. LO:** Thank you, Your Honor.

2 **THE COURT:** You may proceed.

3 **MR. LO:** Thank you.

4 **BY MR. LO:**

5 **Q.** Good afternoon, Dr. Rubin.

6 **A.** Good afternoon.

7 **MR. LO:** Is this -- I don't think the microphone is
8 on.

9 **THE CLERK:** Oh, sorry.

10 **MR. LO:** Thank you.

11 **THE CLERK:** I'll turn it up. It's on.

12 **MR. LO:** Testing. Is it on now? Okay. That's all.
13 Thank you.

14 **Q.** Dr. Rubin, before the lunch, you mentioned that some of
15 your work in this case related to app distribution methods.
16 Can you explain what you mean by that phrase?

17 **A.** Yeah. So app distribution method is the way in which that
18 apps get from developers who make the apps to the users'
19 devices who are using them.

20 **Q.** And are you familiar with some of main ways in which
21 developers can distribute apps or software to potential users?

22 **A.** Yes, I am.

23 **Q.** Okay.

24 **MR. LO:** And let me ask Mr. Eltiste to bring up
25 slide number 6.

(Demonstrative published.)

BY MR. LO:

Q. So let's start here. What information are we looking at here, sir?

A. This is first method of app distribution that I'm going to talk about. What we call this one is direct distribution. And this is case where developers create apps. They're programmers so they write the program, they create the app. And then the users get the app directly from the developers.

So if a user wants an app like this, they have to find the developer who made that app and get it directly from them, and then install it on their phone.

MR. LO: Okay. And Mr. Eltiste, if you could bring up the next slide.

(Demonstrative published.)

BY MR. LO:

Q. And this one is titled "Multiple App Store Distribution." Can you describe what we're looking at here, Dr. Rubin?

A. Yes. So this is another model of app store distribution or app distribution, I should say, and here we have developers who are building apps, and there are multiple app stores, they're numbered 1 through 5.

And so the developer can choose to send their app to app store number 1 and app store number 3, whatever app stores they want to send them to to publish them.

1 And then users have a choice of which app store to go to,
2 to download the app. So they could get from it app store 1,
3 they could get another app from app store 3.

4 Occasionally there may be an app that is only available,
5 say, on app store 4. And so the user would need to go to app
6 store 4 to get that app.

7 **Q.** Are the first two models that we've been talking about
8 mutually exclusive?

9 **A.** They are not.

10 **Q.** Okay. There's been some discussion of the Android system
11 in this case. Do you know how apps are distributed in the
12 Android system?

13 **A.** Yes. In fact, the Android system uses a combination of
14 the two app distribution methods that I've been talking about.
15 So it uses multiple app stores, and it also uses direct
16 distribution.

17 **MR. LO:** Okay, Mr. Eltiste, let's go to the next one,
18 please.

19 (Demonstrative published.)

20 **BY MR. LO:**

21 **Q.** And what do we have here, Dr. Rubin?

22 **A.** So here we see another model of app distribution. This is
23 the central model where there's only one app store.

24 So in this case, the developers send their apps to this
25 app store, the only one. There are no other app stores. And

1 the users, if they want to get apps to put onto their phones,
2 they go to that app store, and then they get their apps.

3 **Q.** And relevant to this case, are there any popular platforms
4 that use the centralized model of app distribution?

5 **A.** Yes. The iOS App Store uses this model.

6 **MR. LO:** Okay. Mr. Eltiste, let's go to
7 slide number 9, please.

8 (Demonstrative published.)

9 **BY MR. LO:**

10 **Q.** So what we've been talking about, this, from the
11 perspective of developers getting apps or software to users,
12 let's talk about it from in terms of device configuration.

13 Does the choice of distribution method affect how user
14 devices need to be configured?

15 **A.** Yes.

16 **Q.** Okay. And -- and how so?

17 **A.** So if -- let's say that you're in the centralized app
18 distribution model. Then the phones need to be set up so that
19 they can only accept apps from one app store, the centralized
20 app store.

21 And if you're in a different model, say a non-centralized,
22 remember, we talked about the direct distribution model where
23 the phones get the apps directly from the developer, well,
24 those phones have to be set up to receive apps directly. And
25 if you took an -- a phone that was set up to only get apps

1 directly and tried to get a -- from a central store, that
2 wouldn't work because the phone has to be configured and set
3 up with respect to the type of app distribution system that
4 it's participating in.

5 **Q.** Okay. And we've been going through the main distribution
6 methods. Let's talk a little bit about the security
7 implications of each one.

8 **MR. LO:** And, Mr. Eltiste, if you could put up
9 slide 11.

10 (Demonstrative published.)

11 **BY MR. LO:**

12 **Q.** So let's --

13 **MR. LO:** Slide 10. I'm sorry.

14 (Demonstrative published.)

15 **BY MR. LO:**

16 **Q.** All right. Let's talk about direct distribution. What
17 are some of the security implications of allowing developers
18 to distribute apps directly to users?

19 **A.** So in this model, there's no app store. And the
20 developers can send their apps directly to the users.

21 So let's say that one of the developers, the one on the
22 bottom in this picture, is a bad developer meaning that they
23 have written a malicious app that does something that it
24 shouldn't do.

25 If we can move to the next slide.

(Demonstrative published.)

THE WITNESS: We see this represented by a red developer so that's our way of showing that they're bad. And they're sending this malicious app, shown here as the red box with the warning sign inside of it, to the users.

Now, when the users receive this app, they'll install it and they'll be infected with this malicious app.

BY MR. LO:

Q. And in the case of direct distribution, are the developers the only potential source of, I'll just say bad apps?

A. No. So what could happen is let's say that a user installs one of these apps on their phone. Because these phones are enabled for direct distribution, they could then infect other phones and other users. So once a user gets infected, that infection can then pass along to other phones.

Q. Right. And is that what's being shown in this diagram here on number 12?

A. On the right-hand side of this diagram, the infection that's shown in the phone is then being shown infecting three other phones.

Q. Okay. Let's take a look at slide 13.

(Demonstrative published.)

BY MR. LO:

Q. And now let's talk about multiple app store distribution.

What -- are there any security implications of having

1 multiple app stores distribute apps from developers to users?

2 **A.** Yes. I want to give you a similar kind of explanation to
3 this as I gave for direct distribution.

4 So when you have multiple app stores, let's look at the
5 case where one of the developers is bad, meaning that they
6 create a -- a malicious app.

7 So if we can move ahead in the presentation.

8 (Demonstrative published.)

9 **THE WITNESS:** Here we see again a malicious
10 developer. And the malicious developer creates a malicious
11 app. And we're no longer directly communicating with the
12 users. We have app stores. And this developer sends the
13 malicious app to four different app stores, the ones labeled
14 2, 3, 5, and 6.

15 **BY MR. LO:**

16 **Q.** Okay. And then so what happens after that?

17 **A.** Well, let's move to the next slide.

18 (Demonstrative published.)

19 **THE WITNESS:** And we can see that app store number 2
20 sends out that malicious app to phones.

21 App store number 3 also receives the malicious app, but
22 that malicious app is not available on app store number 3.
23 And the reason for that could be that app store number 3 might
24 have some more strict security policy than app store number 2.
25 So they may scan the apps or do some other type of analysis

1 and determine that this app is inappropriate or malicious or
2 in some way not going to fit in with that app store's
3 policies. And so that app store blocks that app.

4 And we see two more examples of that where app store
5 number 5 does distribute the app, but app store number 6 does
6 not for similar reasons.

7 **BY MR. LO:**

8 **Q.** Okay. And are you familiar with some of the tools that
9 attackers may use when they are in a system with multiple app
10 stores that are available for distribution?

11 **A.** Yes. Let me talk about that.

12 **MR. LO:** So let's go to number 16, Mr. Eltiste.

13 (Demonstrative published.)

14 **BY MR. LO:**

15 **Q.** What's the information on here, Dr. Rubin?

16 **A.** This is a list of different tools and techniques that the
17 malicious app developers are using today to get apps onto
18 users' devices.

19 **Q.** All right. Let's take these one at a time.

20 The first on the list is multiple listings. What does
21 that mean?

22 **A.** Right. Well, we're familiar with the term multiple
23 listings from the real estate context very often. And it's
24 the same idea here, that the malicious app developer will
25 submit a -- an app to more than one app store. And what

1 they're thinking is not all the app stores have the same
2 security criteria, and so by sending to it more than one, they
3 increase the chance of spreading the malicious app.

4 **Q.** Okay. Second one looks similar, but it's multiple
5 listings with different variations. What do you mean by that
6 as a tool?

7 **A.** Sure. And this is sometimes referred to as the good/bad
8 distribution. And so the idea here is that what the developer
9 does is creates two versions of their app. One of them is
10 benign, it's a good app. And the other one is malicious.

11 And they post the good app on a -- on an app store that is
12 high profile and has a reputation and perhaps is known to do a
13 good job screening apps.

14 And they wait a while so that app becomes popular, common,
15 people are using it. And then they distribute a bad version
16 of the app that's actually malicious, but it looks exactly the
17 same as the good app. It has the same icon, the same name.

18 And what happens is now you have an app that has a good
19 reputation and that is known by people but it's actually
20 malicious if they get the one from the wrong store.

21 **Q.** Okay. And next one is listing in one and updating in
22 another. What is that tool?

23 **A.** Yes. So this one is kind of a similar one, slightly
24 differently flavor of that same attack.

25 So what they do is they'll -- they'll post an app in

1 multiple app stores and wait until that app -- and the app is
2 benign at this point -- wait until the app is downloaded by
3 people and people start using it.

4 And then what they'll do is they'll, for the app stores
5 that are perhaps a little less -- known for not being as
6 secure, they will provide updates to the app, and the updates
7 will turn the app into being malicious.

8 **Q.** Okay. The next two here are both relating to imposters.
9 What do you mean by that?

10 **A.** So an imposter app is an app that borrows from a
11 well-known app. So, for example, let's say, the well-known
12 Evernote program. It's an app that I use. It has a
13 reputation of being a useful app and a safe app.

14 And an imposter app is a developer creates a malicious app
15 that does something bad. And it calls it Evernote, and it
16 makes it look like Evernote. And in fact, sometimes they go
17 so far as to create an experience in the app that looks just
18 like Evernote so you think you're running Evernote. But
19 behind the scenes, something bad is happening.

20 **Q.** Okay. And then what about an imposter store?

21 **A.** Imposter store is taking imposter app to the next level.

22 So what the attackers do is let's say that there is a -- a
23 store that's popular for having productivity apps, and it's
24 well-known. They'll create an entire store that has the same
25 look and feel and a very similar name and put very similar

1 apps there. And maybe at first they'll just put good apps
2 there until the traffic starts to show up, people start using
3 that app store, and then they're malicious so they can start
4 replacing the apps on there with imposter apps and malicious
5 apps.

6 **Q.** Okay. And then finally what does user infection mean in
7 this context?

8 **A.** So we've heard about sideloading in this case. And
9 sideloading is when there's direct distribution from the app
10 developer to a user. And once a user is infected, that user
11 can then infect other users with the app.

12 **Q.** Okay. There's been some testimony by witnesses that if
13 app store distribution were -- were to be opened up, there
14 might be some competition, and as a result of that, some of
15 the stores might actually increase their security level.

16 Have you given thought to that as a possibility?

17 **A.** I have considered that. But that's not what we observe
18 when we look at the data. We see that, in fact, the -- the
19 weakest link is really the problem because if you have
20 multiple app stores, some of them will -- will want to host
21 certain kinds of apps and other stores will have different
22 levels of security. And we're not going to end up in a case
23 where they're all competing with each other on security. And
24 if some of them are not, then those could end up being much
25 less secure places.

1 Q. All right.

2 MR. LO: Mr. Eltiste, let's pull up number 17.

3 (Demonstrative published.)

4 BY MR. LO:

5 Q. All right. So, Dr. Rubin, we've been talking about
6 security implications of the direct distribution, then
7 multiple app distribution.

8 What, if any, are the security implications of a
9 centralized app distribution model?

10 A. A centralized app distribution model has several
11 advantages from a security perspective.

12 One of them is that the same security policy can be
13 applied to all of the apps that come in. So the developers
14 don't have the opportunity to send their apps to an app store
15 that's less secure or to multiple app stores. They all have
16 to go to this app store. And if this app store does a good
17 job of reviewing the apps and filtering the apps, then it's
18 going to prevent a lot of malware from coming out.

19 Q. In a centralized distribution model, is it possible that
20 the single app store may miss things from time to time? So
21 they have a rule against something, but it somehow manages to
22 get through that store?

23 A. Absolutely. Nothing is going to be perfect when we talk
24 about software security. There are always going to be ways
25 for the most clever attacker with the most resources to

1 bypass.

2 So the goal is not perfection. It's to do as good a job
3 as possible. And so in the centralized app store, you have
4 the opportunity to do as good a job as possible and not worry
5 that another app store is going to cause a security problem.

6 **Q.** Okay. In the centralized model, if an app manages to get
7 through the app store despite its best efforts, are there any
8 options there from a security perspective that are different
9 than in a multiple store distribution model?

10 **A.** Yes. I have some slides to illustrate this.

11 **MR. LO:** Okay. Let's go to number 19.

12 (Demonstrative published.)

13 **MR. LO:** Let's go to 18 then.

14 (Demonstrative published.)

15 **THE WITNESS:** Okay. So here we see a malicious
16 developer creates a malicious app, sends it to the app store.

17 On the next slide --

18 (Demonstrative published.)

19 **THE WITNESS:** -- we see another malicious developer
20 sends a malicious app to the app store. And one of these
21 malicious apps manages to get through the app store despite
22 their security attempts.

23 And so what happens is that now that this malicious app
24 has gotten out, at some point it may become publicly known or
25 the app store managers may find out that this happened, and

1 when that happens the app store can then change their review
2 process so that if that particular app or even that kind of an
3 app is seen again, it will be blocked.

4 Furthermore, the app store could identify the developer
5 that sent in that app and ban that developer from the store.

6 So the centralized distribution allows for a process
7 that's dynamic which adjusts itself to information from bad
8 apps that do actually get through.

9 **BY MR. LO:**

10 **Q.** And in the multiple app store distribution model, let's
11 say, you know, in your example store number 2, something gets
12 through. Couldn't they also adjust their measures as well?
13 What's the difference between that and centralized
14 distribution?

15 **A.** The big difference is that in centralized distribution,
16 you're always going to get the information and you're always
17 going to be able to block those apps. But in a multi app
18 store model, store number 2 may have let the app through and
19 the information may be sent to store number 4, or store
20 number 2 may then adjust but then store number 4 didn't
21 adjust, and so that app could still get through store
22 number 4.

23 **Q.** And so just from a security perspective, overall what is
24 your view in terms of the security differences between the
25 various models of app distribution we've been talking about so

1 far?

2 **A.** My view is that the central model is the best for
3 security.

4 **Q.** In the course of your work for this case, Dr. Rubin, did
5 you look at any data that either supports or undermines the
6 conclusion that you just gave right now?

7 **A.** I did. Part of my assignment, as I mentioned in the
8 beginning, was to look for data and use data in my analysis.

9 **Q.** And you mentioned that you looked at the third-party data.
10 And if you need to, there's a copy of your written direct
11 testimony in your binder as well.

12 Did you address that data in paragraphs 47 through 51 of
13 your written direct testimony?

14 **A.** I did.

15 **Q.** Okay.

16 **MR. LO:** Let's take a look at slide 24, please.

17 (Demonstrative published.)

18 **BY MR. LO:**

19 **Q.** All right. So what information is on the screen right
20 now, Dr. Rubin?

21 **A.** So we see here some of the reports that I used in my
22 analysis. And these are the cover pages from those reports
23 which I plan on talking about today.

24 **Q.** Okay. And have you -- in the course of your professional
25 work, have you relied on these types of third-party data

1 previously?

2 **A.** Absolutely. When I do my research, I often look to
3 industry studies that take measurements. Oftentimes third
4 parties have access to more data and are able to do
5 comprehensive studies to provide statistics that I can then
6 use in my research. And these reports are the types of
7 references that I typically use.

8 **Q.** And -- and outside of your specific work, are you aware of
9 others in -- in your industry also relying on data such as
10 this?

11 **A.** Yes. I saw reports that cited these reports as well.

12 **Q.** Okay. Let's talk about these analyses in a little bit
13 more detail.

14 **MR. LO:** And, Mr. Eltiste, if you could just put up
15 the cover of DX4975.

16 **Q.** And, Dr. Rubin, we'll have these on the screen, but
17 they're also in your binder should you need to review them in
18 answering my questions.

19 (Exhibit published.)

20 **BY MR. LO:**

21 **Q.** First, do you recognize what's on the screen now as
22 DX4975?

23 **A.** Yes.

24 **Q.** And what is it?

25 **A.** So this is the cover page of the Nokia Threat Intelligence

1 Report, which is a yearly report that they put out about
2 various malware that they have measured the instances of on
3 the Internet.

4 **Q.** Okay. And I think many of us know Nokia as a mobile
5 handset maker. How is it that they have information about
6 malware?

7 **A.** Nokia is a large company that also makes security
8 products. And in fact, Nokia makes an appliance which is a
9 security device that is widely sold to backbone operators and
10 Internet service providers and are deployed in many places
11 around the world.

12 In fact, according to the report, their product has
13 visibility into 200 million devices, and they use the data
14 that they collect from managing those devices in their study.

15 **Q.** Okay. So let's -- let's break that down a little bit.

16 So Nokia has a product, and I think you mentioned that
17 Internet backbone providers install that. Why are they
18 installing that type of equipment from Nokia, to your
19 understanding?

20 **A.** So they are seeking out Nokia and purchasing this because
21 they want it to protect their network. These appliances are
22 very sophisticated and they have anti-malware capabilities in
23 them. So besides -- they're not completely passive. Besides
24 just analyzing the data that comes across, they also block
25 malware.

1 And in fact, Nokia describes in this report that they have
2 a sandbox, a malware analysis lab. So as they're monitoring
3 the Internet, and they have, like I said, 200 million devices'
4 traffic that they see, they can take samples that they find,
5 put them in their analysis lab sandbox, and take a look at
6 that. And they use the information that they learn, in their
7 study. They also are utilizing honeypots.

8 **Q.** And what are honeypots?

9 **A.** Honeypots are a very popular security tool. I teach a
10 lecture on honeypots in my security course at Johns Hopkins.
11 And what a honeypot is, is a device that is on a hidden part
12 of the Internet. So let me explain that.

13 We know that devices have IP addresses. Your phone, your
14 computer, your smart fridge, all of these devices have an IP
15 address. And the reason is so that they can communicate with
16 each other.

17 And what Nokia does with their honeypot is not all of the
18 IP addresses that are possible have been assigned. And we
19 know that because when a new device comes up, it will get a
20 new IP address. And so there has to be a space of unused IP
21 addresses.

22 So Nokia puts their honeypot computer, which is a server,
23 into an unused area of the Internet by giving it an unassigned
24 random IP address.

25 Now, what's really interesting about this is that any

1 traffic that arrives at that honeypot computer is, by
2 definition, going to be malicious traffic. And the reason is
3 no legitimate computer is trying to communicate with this
4 because it has an unassigned IP address. And so what happens
5 is that attackers are constantly generating random IP
6 addresses and sending traffic, attack traffic, to those
7 addresses.

8 When the honeypot collects malware that it receives, it's
9 malware that may not have ever been seen in the wild before.
10 They may get the fastest way to see new malware may be through
11 a honeypot. And so the malware that's collected in the
12 honeypot is then taken into the sandbox analysis lab and --
13 and analyzed.

14 Q. Okay. Let's take a look at slide 25, then.

15 (Demonstrative published.)

16 BY MR. LO:

17 Q. And so with the various data that Nokia was able to
18 collect, what were the data that the Nokia report shows for
19 the 2020 version of the report?

20 THE COURT: Do you have a copy of the slide deck?

21 MR. LO: Yes, Your Honor.

22 (Pause in the proceedings.)

23 MR. LO: Your Honor, may I hand one to the clerks?

24 THE COURT: You may.

25 (Pause in the proceedings.)

1 **THE COURT:** Go ahead.

2 **MR. LO:** Thank you.

3 **Q.** Looking at slide 25, Dr. Rubin, what information is shown
4 on here?

5 **A.** So this is information that appears in the Nokia report.
6 And this is some of their conclusions and some of their
7 measurements.

8 And what they showed is that on the iOS platform, around
9 1.7 percent of the infections that they observed on -- on the
10 Internet were from the iOS platform. And the Android platform
11 had 26.6 percent of the infections on the devices that they
12 measured.

13 **THE COURT:** Isn't that just a function of the fact
14 that there are more Androids?

15 **THE WITNESS:** Well, the truth of the matter is that
16 in the studies that I read, the indications were that
17 globally, there are about three times as many Android devices
18 as iOS devices. But here we see that the ratio is much bigger
19 for the infections on Android.

20 **THE COURT:** So did you do the numbers based in terms
21 of percentage of devices?

22 **THE WITNESS:** I did not do that calculation. But
23 the -- if it's three times, then we would expect about
24 5 percent Android if we had 1.7 percent, and not 26.6.

25 **THE COURT:** Okay.

1 **MR. LO:** And, Mr. Eltiste, let's turn to DX4975 and
2 go to page 8, please. And let's just focus in on the
3 right-hand side with these two pie charts.

4 (Exhibit published.)

5 **THE WITNESS:** Sure.

6 **BY MR. LO:**

7 **Q.** And, Dr. Rubin, do you recognize the information that's on
8 the screen now which comes from page 8 of the Nokia report?

9 **A.** Yes.

10 So the right-hand side pie chart is the one that I
11 produced in the previous slide. It's just kind of clear with
12 the colors to look at.

13 **Q.** Okay. And does Nokia do a similar study every year, or is
14 this a one-off thing that Nokia does?

15 **A.** My understanding, it's an annual study. And on the left
16 we see the 2019 numbers.

17 **Q.** And so what are the 2019 numbers with respect to Android
18 versus iOS?

19 **A.** So here we see much greater difference. On the Android
20 it's 47 percent. And in the iPhone they said it was less than
21 1 percent.

22 **Q.** Okay. And, again, recognizing that you may not be able to
23 do the math on the spot, what does that tell you even if you
24 take into account the assumption that there are about three
25 times as many Android devices as there are iOS devices?

1 **A.** Right. Then three times the iOS number would be less than
2 three. And we have 47 percent for Android.

3 **THE COURT:** So in IOT, the Internet of Things, what
4 do you understand that to be?

5 **THE WITNESS:** So IOT is actually the -- the primary
6 area of my research these days, is IOT security. And the
7 Internet of Things has to do with like your smart thermostat,
8 your refrigerator, your toaster, all of these things that if
9 you go into Best Buy and there's a section on Smart Home,
10 these devices are proliferating very, very rapidly.

11 **THE COURT:** Okay. Thank you.

12 **BY MR. LO:**

13 **Q.** And Dr. Rubin, with respect to the IOT devices, those are
14 relatively high numbers relative to iOS. Have you done any
15 study or analysis as to why that might be?

16 **A.** Yes. So the -- the IOT devices are based on Linux, the
17 Linux operating system. The software is not very well
18 controlled. Every one of the devices does its own update from
19 their manufacturer or from some app store that they choose.

20 **Q.** Okay.

21 **MR. LO:** Let's zoom out a little bit, Mr. Eltiste,
22 and let's take a look at the left-hand side of this page 8 of
23 DX4975.

24 (Exhibit published.)

25

1 **BY MR. LO:**

2 **Q.** Dr. Rubin, does the Nokia report provide any explanation
3 as to why the Android infection rate is higher than the iOS
4 infection rate?

5 **A.** Yes. If we look at the middle of the third paragraph that
6 starts with "However."

7 (Exhibit published.)

8 **BY MR. LO:**

9 **Q.** Yes.

10 **A.** So, however the fact that Android applications can be
11 downloaded from just about anywhere still represents a huge
12 problems as users are free to download apps from third-party
13 app stores where many of the applications, while functional,
14 are Trojanized.

15 And then it goes on to say, "iPhone applications, on the
16 other hand, are for the most part limited to one source, the
17 Apple Store."

18 So the Nokia report attributes the difference in the
19 number of infections between Apple and Android to the
20 availability of multiple app stores in Android and the central
21 distribution in the Apple Store.

22 **Q.** Is that a conclusion with which you agree?

23 **A.** That is a conclusion with which I agree, yes.

24 **Q.** Okay.

25 **MR. LO:** Mr. Eltiste, if you could put up the first

1 page of DX4934.

2 And again, Dr. Rubin and Your Honor, this will be in your
3 binder. So but we'll put it up on the screen so we can look
4 at it together.

5 (Exhibit published.)

6 **BY MR. LO:**

7 **Q.** Dr. Rubin, what is DX4934?

8 **A.** So this is a report put out by an organization called
9 RiskIQ. And what they do is they look at, like the title
10 said, the Mobile App Threat Landscape Report.

11 And the idea behind this report is to look at many, many,
12 many apps. The report states that they looked at 2 billion
13 apps. And they look at them in many different stores. They
14 look at them in the Apple App Store. They look in the Google
15 Play Store. And in this particular study, they looked at over
16 120 different Android stores.

17 **Q.** And when the RiskIQ group is looking at these stores, what
18 is it that they're looking for?

19 **A.** So what they're looking for is what is referred to in the
20 study as blacklisted apps. I'm not particularly fond of that
21 term, but that is what they call them in here. So for the
22 purpose of this discussion, I will continue to refer to them
23 as the blacklisted apps.

24 **Q.** And how does RiskIQ define a blacklisted app?

25 **A.** So the RiskIQ report says that blacklisted apps are apps

1 that are publicly known to be suspicious or malicious or to
2 have some concern.

3 There's an organization that's very well-known that's
4 called Total Virus. And they publish a list of blacklisted
5 apps. And there are other sources as well where people submit
6 apps that they know are -- are bad in some way.

7 **Q.** And when you say bad or I guess when RiskIQ says they're
8 bad, what kinds of behavior or things gets an app onto the bad
9 list?

10 **A.** Sure. So I'd actually like to turn to that section of the
11 report because they identify the type of apps that are
12 considered to be bad in the report.

13 **Q.** All right. So is that -- let's --

14 **MR. LO:** Mr. Eltiste, let's go to 4934.2.

15 (Exhibit published.)

16 **THE WITNESS:** It's the last paragraph on this page.

17 (Exhibit published.)

18 **THE WITNESS:** And it talks about the threat actors
19 taking advantage of myopia, and I believe that refers to -- of
20 users, and produce rogue apps that mimic well-known brands or
21 otherwise purport to be something they're not.

22 If you recall when I talked about attacker tools, I
23 mentioned the idea of imposter apps, and that's what this is
24 referring to.

25 And it says that once an unsuspecting user downloads these

1 malicious app, threat actors can have their way phishing them
2 for sensitive information or uploading malware to their
3 devices.

4 **BY MR. LO:**

5 **Q.** And what is phishing, with a "P"?

6 **A.** Phishing with a "ph" is a term that's become pretty
7 common. And the idea is that you've got an unsuspecting user
8 on the hook and you're trying to reel them in. And so this is
9 a form of what's called social engineering where the attackers
10 are having the user help them in attacking the user.

11 **Q.** Okay.

12 **MR. LO:** Mr. Eltiste, let's go to page 6 of this
13 document. And let's focus just on the top half with the bar
14 graph, please.

15 (Exhibit published.)

16 **BY MR. LO:**

17 **Q.** So we've talked a little bit about the methodology and
18 what the RiskIQ is looking for. What information is on page 6
19 of the RiskIQ report, Dr. Rubin?

20 **A.** So here we see the RiskIQ, recall that they downloaded
21 billions of apps and performed these measurements. And what
22 they showed in this chart is the number of apps that were
23 already blacklisted at the time that this report was -- was
24 written and how many of those apps were found at different app
25 stores.

1 Q. Okay. And who was the number one on this list?

2 A. So the Google Play Store had over 10,000 blacklisted apps
3 on it.

4 Q. Okay. And then number two is Xioami. Are you familiar
5 with them?

6 A. Yes, I am.

7 Q. And what is Xioami?

8 A. Xioami is a device manufacturer. They build a smartphone
9 that runs the Android operating system, their version of it.
10 And they also have an app store.

11 Q. Okay. And then number five on this list is Tencent. Are
12 you familiar with Tencent?

13 A. Yes.

14 Q. And what is Tencent?

15 A. Tencent is a large company that also has an app store.

16 Q. Okay. And where did Apple fall on the list of blacklisted
17 app offenders?

18 A. Apple didn't make the list.

19 Q. Okay. And why is that?

20 A. Because they didn't have enough blacklisted apps to
21 register.

22 Q. Okay. Is it clear that the methodology of RiskIQ
23 considered Apple, or -- or was this perhaps an Android-only
24 study?

25 A. It's pretty -- it's totally clear that they considered it

1 because in the beginning of the document, they said that they
2 looked at the Apple App Store, the Google Play Store, and over
3 120 other stores.

4 And then after this graph in the same report, they talk
5 about Apple and refer to Apple as Fort Knox.

6 **MR. LO:** Okay, and let's turn to, Mr. Eltiste, to
7 page 5 of the document. And let's go to the middle there.
8 There you go.

9 (Exhibit published.)

10 **BY MR. LO:**

11 **Q.** Is this what you were referring to in your testimony just
12 a minute ago, Dr. Rubin?

13 **A.** Yes.

14 **Q.** Okay. And what does RiskIQ say about the Apple App Store?

15 **A.** It says that "Apple treats its App Store like Fort Knox
16 and rarely hosts dangerous apps."

17 **Q.** Okay. So let's go back then to page 6.

18 (Exhibit published.)

19 **BY MR. LO:**

20 **Q.** And previously we were looking at the bar graph on the top
21 which gives -- gives the total numbers.

22 Does the RiskIQ report present its data in any other
23 fashion?

24 **A.** Yes, it does.

25 **Q.** And -- and how so?

1 **A.** It also presents a ranking of the app stores based on the
2 concentration of blacklisted apps.

3 **Q.** Okay. So let's take a look at the bottom half of page 6.

4 (Exhibit published.)

5 **BY MR. LO:**

6 **Q.** First, what do you mean when -- or what does RiskIQ mean
7 when they're talking about the concentration of malicious
8 apps?

9 **A.** The first bar graph that we looked at represented the
10 total number of blacklisted apps that were found. The
11 concentration has to do with how many blacklisted apps there
12 are relative to the total number of apps. So in particular,
13 if you are were to throw a dart at the app store, what is the
14 likelihood that you would hit a blacklisted app.

15 **Q.** And you have may have suggested the answer already, but
16 from a security perspective, why does concentration matter as
17 opposed to just raw numbers?

18 **A.** That's because the higher the concentration is of
19 malicious apps, the more likely you are to get a malicious app
20 from that app store if you're downloading apps.

21 **Q.** And the five stores that are on the top five, are you
22 familiar with them from your work?

23 **A.** I am.

24 **Q.** And what kind of apps do they distribute?

25 **A.** These are Android apps.

1 Q. Let's turn to DX4956.

2 MR. LO: And, Mr. Eltiste --

3 THE COURT: Can you first, before you move --

4 MR. LO: Yes.

5 THE COURT: -- can you tell me anything about this
6 company RiskIQ? Is it -- how can I be sure it's not biased?

7 THE WITNESS: Well, RiskIQ is -- is pretty
8 well-known. And when I was doing my research, I found other
9 sources that I cite in my report that cited RiskIQ. I think
10 it's a pretty widely cited source.

11 THE COURT: Do you know if it has any funding by
12 Apple?

13 THE WITNESS: I don't know where they get their
14 funding. My -- I think that they're an independent security
15 company, but I -- I don't know for sure.

16 THE COURT: Okay.

17 Proceed.

18 MR. LO: Thank you.

19 Q. Let's then turn to DX4956.

20 (Exhibit published.)

21 BY MR. LO:

22 Q. And Dr. Rubin, what is DX4956?

23 A. This is the study done by PurpleSec, which I do know is a
24 computer security company run by several security experts.

25 And they produced a study of statistics, data, and trends in

1 computer security.

2 Q. And what does the PurpleSec report tell you, or what did
3 it tell you in connection with your work in this case?

4 A. So the statistic that I found the most interesting in this
5 report was that they say that 98 percent of -- of malicious
6 attacks on the Internet are related to social engineering.

7 Q. And what are social engineering attacks?

8 A. Social engineering attacks, as I alluded to earlier, these
9 are attacks where the attacker is fooling the user somehow and
10 getting the user to participate in attacking themselves.

11 Q. Okay. And do you have an example of one?

12 A. Yes. So let me give you an example from just a couple of
13 months ago of a high-profile social engineering attack that
14 happened with an Android app.

15 We all know that security experts are always telling us to
16 update our devices, right? It's important from a security
17 standpoint if your phone needs to be updated, to update it and
18 get the latest security patches.

19 Well, the -- there was a malware on Android that disguised
20 itself as a systems update. So what would happen is the user
21 would be looking at their phone, and a window would pop up and
22 say you need to update your system. And then it would tell
23 the user as part of this update process, I'm going to need you
24 to enable your phone, your GPS, all of the different things
25 that normally you need, you know, entitlements in iOS for

1 those type of things.

2 And the user would then -- unsuspecting user would be,
3 "Well, I'm doing a system update, it must be true," and they
4 would click enable, enable, enable, enable.

5 Then what happened is the phone, basically there was --
6 there was malware in the payload of this app which would
7 connect it to what's called a botnet. A botnet is a network
8 of compromised devices that are controlled by some malicious
9 party. In this case, it was called Firebase, the Firebase
10 command-and-control botnet.

11 And the way this worked was that when the
12 command-and-control commands would come to the iPhone -- I'm
13 sorry, it wasn't an iPhone, it was an Android phone. When the
14 commands would come to the compromised phone, it would then
15 listen to things like turn on the camera, and take a picture,
16 and send me the picture.

17 Another type of attack that was documented in this
18 particular social engineering attack was the
19 command-and-control could say launch attack number X, whatever
20 X is, and that attack would be: Listen to the next phone
21 conversation, record both ends of the conversation, and send
22 the data file with that audio to the attackers.

23 So pretty much the device is completely owned at that
24 point and completely under the control of the attackers.

25 Q. And so that's an example of a social engineering, and you

1 mentioned that -- the -- the PurpleSec said that about
2 98 percent were social engineering. Why was that statistic
3 relevant or important to you?

4 **A.** Well, this statistic was very important to the work that I
5 did in this case because social engineering are the very types
6 of attacks that require the human manual app review and that
7 cannot really be stopped on a device because they're tricking
8 the user into doing things that are going to pass the
9 on-device checks.

10 **Q.** Okay. And do you have an understanding of why attackers
11 are now using those instead of just the traditional malware?

12 **A.** Yeah, there are several reasons. One is that social
13 engineering is very effective and those attacks are working.
14 And by employing the help of the user who is authorized to do
15 all kinds of things, the attackers are able to get the attacks
16 to be more successful.

17 **Q.** And did you have an understanding of the methodology that
18 PurpleSec used to put together the information that's in the
19 report?

20 **A.** Yes. So in their report, they have a companion website
21 that lists all of their sources, they read all the industry
22 studies they can get their hands on, and they interview
23 security experts in the field.

24 **Q.** Thank you.

25 And before we move on, I'm going to ask Mr. Eltiste to put

1 up the website of RiskIQ and just ask you to take a look at it
2 in response to the Judge's question.

3 Dr. Rubin, do you recognize this as the website of RiskIQ?

4 (Demonstrative published.)

5 **THE WITNESS:** I do.

6 **BY MR. LO:**

7 **Q.** And does this refresh your recollection as to whether
8 Apple has any involvement with the funding of RiskIQ?

9 **A.** I -- I see a bunch of well-known venture capital firms
10 here. I don't want to comment on relationships they might
11 have with Apple so I'm going to say that I just don't know.

12 **Q.** All right. Thank you.

13 **MR. LO:** Let's go back to, Mr. Eltiste, to slide
14 number 4.

15 (Demonstrative published.)

16 **BY MR. LO:**

17 **Q.** All right. So we've put up here your conclusions.

18 And what I want to ask you, Dr. Rubin, is the various
19 studies that you looked at, what impact, if any, did they have
20 on the conclusions you reached in this case?

21 **A.** The studies that I looked at reinforced the conclusions
22 that I came to in this case that the app review process, along
23 with central distribution, is going to result in lower
24 infection rates on devices and a lower volume of malicious and
25 untrustworthy apps.

1 Q. And we've been looking at three reports today. Did you
2 choose these reports because they had numbers that are
3 favorable to Apple? How did you choose these reports?

4 A. I chose these reports because I felt they had solid and
5 sound methodologies. The reports that I looked at, other
6 reports were consistent with this. I didn't see a single
7 report that showed the opposite of that. And so that was the
8 method -- the method that I used to pick these reports.

9 Q. Okay.

10 In your written direct testimony, you make reference to
11 some stores that are ad-based. Do you recall that?

12 A. Yes.

13 Q. And can you describe what it means for a store to be
14 ad-based?

15 A. It means that a store shows ads and so that they make
16 money by getting a lot of eyeballs on the site.

17 Q. Okay. And in the context of evaluating security, why are
18 you disgusting -- discussing stores that show ads?

19 A. Because the goal of those stores is to get people to look
20 at ads.

21 MR. BYARS: Objection, Your Honor. Speaking to
22 incentives which Your Honor struck from his written direct
23 testimony.

24 MR. LO: Your Honor, it's paragraph 84 of the written
25 direct, and it's in the binder that I handed up in -- in this

1 first tab.

2 **MR. BYARS:** To be clear, I'm objecting to the oral
3 testimony about incentives that app stores may or may not
4 have.

5 **THE COURT:** I struck some things and not others.

6 84?

7 **MR. LO:** Yes, Your Honor. And the Court struck the
8 first sentence.

9 **THE COURT:** I struck the conclusion. I didn't strike
10 just the data.

11 You can't -- so --

12 **MR. LO:** Thank you, Your Honor.

13 **Q.** So what -- what does ad-based stores have anything to do
14 with security?

15 **A.** It's related to security because an app store that is
16 based on -- on getting eyeballs to see ads is not likely to
17 devote as much time to security as they are to other things.

18 **Q.** How do ad-based stores make money, if you know?

19 **A.** They make money by people looking at their -- their site
20 and getting eyes on the ads.

21 **Q.** Do you have personal experience looking at some of these
22 stores?

23 **A.** Yes, I do.

24 **Q.** And what kind of apps are they selling or providing to the
25 public?

1 **A.** Well, a lot of the stores have these imposter apps on the
2 stores or adult content, things like that.

3 **Q.** Okay. And things like adult content, while some people
4 might find them objectionable, does that have anything to do
5 with security?

6 **A.** It does because there's a study I cite in my report that
7 shows a correlation between the type of content that's shown
8 on a -- on a -- in an app store and that can be download and
9 malware. It seems to be much more prevalent when there's
10 adult and other inappropriate content.

11 **MR. LO:** Mr. Eltiste, if you could put up
12 slide number 3, please.

13 (Demonstrative published.)

14 **BY MR. LO:**

15 **Q.** Dr. Rubin, we've been looking at app store distribution,
16 and we've talked a little bit about the real-world data that
17 you looked at. You mentioned earlier that part of your
18 assignment related to evaluating Apple's app review, and I now
19 want to turn to that.

20 What, if anything, did you do to evaluate Apple's app
21 review?

22 **A.** So what I did was I -- I spoke several times at some
23 length to Mr. Kosmyinka who heads Apple's app review process.
24 I also looked at internal documents of theirs. And I looked
25 at the App Review Guidelines and other public documents as

1 well.

2 Q. Did you conduct any comparative analysis between Apple's
3 process and the process of anyone else?

4 A. I did.

5 Q. And what did you do?

6 A. I looked at Google's process in the Google Play store.

7 Q. Okay. And, Dr. Rubin, I'll remind that you that that
8 information is -- is confidential. So I'm just going to ask
9 you some questions and ask you to answer at a high level
10 without giving any detailed information if you could.

11 A. Sure.

12 Q. At a high level, what types of -- well, first, how is it
13 that you had access to Google internal materials?

14 A. I signed the protective order in this case, and I got
15 access because of that.

16 Q. Okay. And at a high level, what types of information was
17 included in the Google internal information?

18 A. I saw statistics about the human app review process and
19 some internal evaluations.

20 Q. Okay. And did you analyze the Google documents in your
21 written direct testimony?

22 A. I do. That can be found in paragraph 57.

23 Q. And, again, without citing to any specific details,
24 what -- did you draw any overall conclusions in comparing
25 Google's review process and Apple's review process?

1 **A.** I did. I found that Apple's app review process looked at
2 far more apps in human review. In fact, Apple looks at all of
3 the apps. And I found their process to be more effective.

4 **Q.** Okay. Thank you, Dr. Rubin.

5 **MR. LO:** Your Honor, I pass the witness.

6 **THE COURT:** Cross.

7 So I did take it from that last statement, that you -- the
8 distinction you're making is not at the automatic level of the
9 software, but specifically with respect to the human review?

10 **THE WITNESS:** There are -- there is information that
11 I saw that I believe is protected that was broader than that
12 and -- and was relating to the entire app review process.

13 **THE COURT:** In what paragraphs of your report?

14 **THE WITNESS:** Fifty-seven.

15 **THE COURT:** Okay.

16 Proceed.

17 **MR. BYARS:** Your Honor, may I approach?

18 **THE COURT:** You may.

19 (Handing binder.)

20 **THE COURT:** While you're getting set.

21 Mr. Doren, I'm going to need Mr. Schiller's deposition
22 transcript, please.

23 **MS. FORREST:** Your Honor, I actually -- I actually
24 showed this --

25 **THE COURT:** Okay. We'll talk later then. As long as

1 you all have it handy, we'll talk later.

2 **MR. DOREN:** Thank you, Your Honor.

3 **THE COURT:** Proceed.

4 **MR. BYARS:** Thank you, Your Honor.

5 **CROSS-EXAMINATION**

6 **BY MR. BYARS:**

7 **Q.** Dr. Rubin, you referred to being the chief scientist --

8 **THE COURT:** Counsel, remind me of your name.

9 **MR. BYARS:** I'm sorry, Your Honor. It's Brent Byars
10 for Epic.

11 **THE COURT:** That's what I thought. Just making sure.
12 Thank you.

13 **MR. BYARS:** Thank you.

14 **Q.** You referred to being the chief scientist of a company
15 called Harbor Labs; is that right?

16 **A.** That's correct.

17 **Q.** There's another company that you're a proprietor of called
18 Harbor Experts; is that right?

19 **A.** That's right.

20 **Q.** And through that company, you provide expert consulting
21 services in litigation; is that correct?

22 **A.** That's right.

23 **Q.** And you've actually given or been deposed in over
24 50 litigation matters as an expert; is that right?

25 **A.** That's right.

1 Q. And 20 of those were in the last four years; is that
2 correct?

3 A. That's right.

4 Q. And most of those have been in patent cases, right?

5 A. That's right.

6 Q. And you were giving an opinion on whether a patent was
7 valid or infringed or both?

8 A. I have worked both defendant and plaintiff sides on both
9 infringement and validity questions.

10 Q. But, sir, most of those cases were patent cases; is that
11 right?

12 A. Yes.

13 Q. In some of those cases, Apple had hired you; is that
14 correct?

15 A. I have worked on a patent case for Apple.

16 Q. Have you worked on more than one patent case for Apple,
17 sir?

18 A. I'm -- I'm not sure. None of the patent cases I worked
19 for Apple really went any far -- very far.

20 Q. Okay. So but there was more than one case in which you
21 worked for Apple; isn't that right?

22 A. There may be one or two, I think. But in one of those
23 cases, I don't think I did anything. I was retained and then
24 the case settled or something.

25 Q. Okay. Thank you.

1 So I've seen you on the Zoom during trial. I infer you've
2 been following the testimony; is that right?

3 **A.** I have been.

4 **Q.** Did you see Dr. Mickens' testimony?

5 **A.** I did. I didn't see it, I heard it.

6 **Q.** Thank you for that clarification. Me as well.

7 You're familiar with Dr. Mickens' prior work, aren't you?

8 **A.** Before this case?

9 **Q.** Just his prior work generally that he's done previously.

10 **A.** Yes, some of it.

11 **Q.** And you agree he's an expert in computer security which is
12 the same field that you're in?

13 **A.** Yes.

14 **Q.** And even if you disagree with his opinions, you believe
15 he's qualified to offer them; isn't that right?

16 **A.** Yes.

17 **Q.** I just want to get some basics first and then we can talk
18 more detail.

19 You attribute iOS security to four aspects of the iPhone
20 security model, right?

21 **A.** I -- I'm not sure which four specifically you're referring
22 to, but I -- but that sounds like I might have written that in
23 my report.

24 **Q.** Okay. Let's go through the four. The first is identity
25 verification of developers, right?

1 **A.** Yes.

2 **Q.** The second is a manual and automated app review process,
3 right?

4 **A.** That sounds right.

5 **Q.** The third is certificate validation and code signing,
6 right?

7 **A.** That sounds right.

8 **Q.** And the fourth is on-device run time security protections,
9 correct?

10 **A.** Yes.

11 **Q.** And one on-device security protection is called
12 sandboxing; isn't that right?

13 **A.** That is correct.

14 **Q.** Sandboxing is a very important component of how iOS
15 devices are secured; isn't that right?

16 **A.** Yes.

17 **Q.** In fact, sandboxing, you believe, is one of the greatest
18 contributions in recent computer security, correct?

19 **A.** I think that's right.

20 **Q.** And you previously testified in one of these cases that
21 sandboxing has affected the lives of many people; isn't that
22 right?

23 **A.** Yes.

24 **Q.** Now, you talked about Android. So let's -- let's dig into
25 that. In your opinion, many non-iOS systems have less secure

1 runtime protections, correct?

2 **A.** Yes.

3 **Q.** Android is one of those systems with less secure runtime
4 protections; isn't that right?

5 **A.** I think that's correct.

6 **Q.** And you cited studies challenging Android's sandboxing
7 security, right?

8 **A.** I did. I cited two reports about escaping the sandbox and
9 bypassing sandbox securities.

10 **Q.** Sir, I just need a yes or no, please. Just so the record
11 is clear, you've cited studies challenging Android sandboxing
12 security, right?

13 **A.** I did.

14 **Q.** And if sandboxing in the Android iOS is weaker than it is
15 on iOS, that could contribute to security weaknesses on
16 Android devices, right?

17 **A.** That could.

18 **Q.** In fact, you spoke about one particular issue, what is
19 called a man-in-the-disk vulnerability, right?

20 **A.** Yes.

21 **Q.** You remember discussing that in your written direct
22 testimony?

23 **A.** Yes.

24 **Q.** And do you remember discussing that at your deposition
25 where we looked together at the report you had cited, and it

1 described that vulnerability as resulting from the use of
2 external storage on Android?

3 A. Yes.

4 Q. And external storage on Android, at least that time, was
5 not sandboxed, right?

6 A. I think that's right.

7 Q. And iOS, to your knowledge, does not have external
8 storage, right?

9 A. I don't think it does.

10 Q. And you had actually not assessed whether that
11 vulnerability, which you called a man-in-the-disk
12 vulnerability, could happen on iOS.

13 A. I haven't done that analysis.

14 Q. By the way, did you hear Dr. -- or sorry, Mr. Federighi's
15 conclusion yesterday that if app distribution were opened up,
16 Apple could continue requiring complete sandboxing in iOS?

17 A. I heard his testimony. I --

18 Q. Sir, I'm just asking if you heard the testimony.

19 (Simultaneous colloquy.)

20 **THE WITNESS:** -- heard the testimony, yes.

21 **BY MR. BYARS:**

22 Q. Do you defer to Mr. Federighi, who is responsible for iOS
23 engineering at Apple, on that issue?

24 A. Yes.

25 Q. Sir, you also believe that the uniformity of iOS operating

1 contributes to iOS security; isn't that right?

2 **A.** That's right.

3 **Q.** And that's a contrast again with Android where there are
4 many different device makers all using that same OS, right?

5 **A.** They're using variants of it.

6 **Q.** Thank you for that clarification.

7 So all of the -- all of the device makers in Android are
8 using variants of the operating system called Android?

9 **A.** Right.

10 **Q.** And as a result, OS upgrades in the Android ecosystem
11 occur at irregular intervals, right?

12 **A.** Did you say regular or irregular?

13 **Q.** Thank you. Irregular.

14 **A.** Yes.

15 **Q.** And sometimes they don't occur at all, right?

16 **A.** Some people don't update.

17 **Q.** And we could call that fragmentation of the operating
18 system, right?

19 **A.** Yes.

20 **Q.** And again, that makes Android more fragmented than iOS,
21 right?

22 **A.** Yes.

23 **Q.** And that fragmentation makes Android devices more
24 attractive targets for malware, right?

25 **A.** It does.

1 Q. You understand that Epic is not asking Apple in this case
2 to license the iOS to other device makers; isn't that right?

3 A. I have been very confused about what Epic is asking for,
4 and I don't really understand what they want --

5 Q. Okay. Sir, just try to answer the question specifically.

6 You do not understand Epic to be asking Apple to license
7 the iOS to other device makers like occurs in the Android
8 ecosystem, right?

9 A. I haven't heard that specific request.

10 Q. Now, I think you testified on direct that Google Play has
11 a less stringent and comprehensive review process than Apple;
12 isn't that right?

13 A. Yes.

14 Q. And as a result you believe that Google Play Store has
15 distributed more malware than the App Store, right?

16 A. That's part of it.

17 Q. Okay.

18 So we've talked about three things that are specific to
19 Android that haven't occurred on -- on iOS, right? We talked
20 about less secure runtime protections, right?

21 A. Yes.

22 Q. We talked about a more fragmented operating system, right?

23 A. Right.

24 Q. And we talked about a centralized app store that's using
25 less comprehensive review processes, right?

1 **A.** Right.

2 **Q.** And each of those things could be contributing to
3 incremental malware on Android, right?

4 **A.** Yes.

5 **Q.** I want to talk about another comparison you drew which is
6 the Android marketplace in China. In your opinion, the
7 Android marketplace in China illustrates the real-life
8 consequences of fragmentation of app distribution, right?

9 **A.** Yes.

10 **Q.** And you observed that the centralized Android store,
11 Google Play, is banned in China, right?

12 **A.** Yes.

13 **Q.** And in its place, a variety of other app distribution
14 stores have popped up to replace it.

15 **A.** Yes.

16 **Q.** And in your opinion, as a result of this fact, China
17 itself faces a high risk of malware, right?

18 **A.** Right. It's not just my opinion, it was in the studies
19 that I looked at.

20 **Q.** Sir, that's your opinion, isn't it?

21 **A.** Yes.

22 **Q.** But you understand that Epic is not asking in this case
23 that the Apple App Store be banned in China or anywhere else,
24 right?

25 **A.** I -- I haven't heard that request from Epic.

1 Q. Okay. Thank you.

2 And you've heard -- you may have heard testimony about
3 there being black market app stores in China on iOS 2, right?

4 A. I did. There were people that were taking advantage of
5 the enterprise program.

6 Q. Sir, the answer is yes?

7 A. Yes.

8 Q. Okay. Thank you.

9 In that case, the App Store still would have been
10 available for use in China alongside those black market app
11 stores, right?

12 A. The -- the App Store would not have been because these
13 were using the developer enterprise which doesn't go through
14 the App Store.

15 Q. Okay. Let me ask the question differently because I think
16 we may have had a misunderstanding.

17 A. Okay.

18 Q. So at the time when these black market app stores were in
19 China, the App Store was not banned in China, right?

20 A. The iOS App Store?

21 Q. Yes.

22 A. Right.

23 Q. So users could still have chosen to use the iOS App Store,
24 right?

25 A. I believe users could have chosen any app store.

1 Q. Okay. And even though that's a situation in iOS where the
2 iOS App Store still existed, you chose not to compare that,
3 the incidence of malware in that situation, right?

4 A. There's a good reason.

5 Q. You chose not to do it, sir, right?

6 A. Yes.

7 Q. Okay. Another metric you've used to compare Android to
8 iOS is called comparative security -- sorry -- common
9 vulnerabilities and exposure, right?

10 A. Yes.

11 Q. Those are called CVE's in the trade?

12 A. Yes.

13 Q. Thank you.

14 And CVE is a broad term, right?

15 A. Well, it's actually a specific type of --

16 Q. Sir, is it a broad term?

17 A. It -- I can't just say yes or no there.

18 Q. Okay. Is it a broad term that can include flaws in
19 software, hardware, or computer components?

20 A. Yes.

21 Q. Okay. So the term is broader than apps, right?

22 A. It's a -- it's uncomparable. It's a very different type
23 of term, I think.

24 Q. Okay. The term does not only include problems of apps;
25 isn't that right?

1 **A.** Yes.

2 **Q.** Okay. And you didn't, in your testimony, address the
3 proportion of CVE's that might be assigned to apps, right?

4 **A.** I didn't look directly at that.

5 **Q.** Okay. And these CVE's are collected in what I'll call a
6 national database; isn't that right?

7 **A.** Yes.

8 **Q.** And members of the public can -- can submit CVE's, right?

9 **A.** That's right.

10 **Q.** In fact, anyone can, right?

11 **A.** Yes.

12 **Q.** And the -- the database only includes vulnerabilities that
13 have been reported by somebody, including a member of the
14 public, right?

15 **A.** That's right.

16 **Q.** The Android OS is open source, right?

17 **A.** That's right.

18 **Q.** And the iOS is mainly closed source, right?

19 **A.** The iOS kernel is open source. The rest of it, I believe,
20 is -- is closed.

21 **Q.** So there's iOS code that is closed source, right?

22 **A.** There is.

23 **Q.** Okay. And the fact that Android's OS is mostly public and
24 available to the public makes it easier for members of the
25 public to identify CVE's, right?

1 **A.** Well, the -- I'm not sure I agree with that.

2 **Q.** Okay. Let me say it again.

3 The fact that Android OS's code is openly available to the
4 public might make it easier for members of the public to
5 identify CVE's correct?

6 **A.** I think the answer would be nuanced. I can't just say yes
7 or no.

8 **Q.** Okay, sir, could I refer you --

9 **MR. BYARS:** Your Honor, could I refer him to his
10 deposition, page 199?

11 **THE WITNESS:** Which tab is it?

12 **BY MR. BYARS:**

13 **Q.** So I believe we gave you a coil inside of our book.

14 **A.** Okay.

15 (Reviewing document.)

16 **THE COURT:** Page 199.

17 (Simultaneous colloquy.)

18 **MR. BYARS:** 199, lines 15 through 25, and
19 particularly 21 through 25.

20 **THE COURT:** That's not -- wait. 21 through 25.
21 Okay. Hold on.

22 Well, he didn't answer yes or no. So --

23 **MR. BYARS:** Your Honor, I asked him the specific
24 answer whether he thought that it might.

25 **THE COURT:** Ah. Okay.

1 **BY MR. BYARS:**

2 **Q.** So, sir, were you asked this question and did you give
3 this answer?

4 "Q. Does the fact that Android -- Android
5 OS code is openly available to the public make
6 it easier for members of the public to identify
7 CVE's?

8 "A. It might."

9 **A.** I think that's what I'm saying here.

10 **Q.** Okay. So you stand by that answer?

11 **A.** Yes.

12 **Q.** Okay. Thank you.

13 And you agree this may be why more CVE's are reported for
14 Android compared to iOS, correct?

15 **A.** Could you please repeat the question?

16 **Q.** Sure.

17 You agree that this may be why more CVE's are reported for
18 Android compared to iOS, correct?

19 **A.** Well, if it is, I said that it might because the kernel in
20 Mac is --

21 **Q.** Do you agree with that, yes or no?

22 **A.** Again, this is -- this is --

23 **Q.** Sir, I'm on --

24 (Simultaneous colloquy.)
25

1 **BY MR. BYARS:**

2 **Q.** -- a clock and I'm entitled to a yes or no answer to the
3 question.

4 **A.** That would be misleading.

5 **THE COURT:** If you can't say yes or no, that's fine.
6 Just say you can't.

7 **THE WITNESS:** I can't say yes or no to that.

8 **MR. BYARS:** Okay. Your Honor, may I refer the
9 witness to page 200, lines 1 through 7 of his deposition?

10 (Pause in the proceedings.)

11 **THE COURT:** Okay. Are you there?

12 **THE WITNESS:** I'm there.

13 **THE COURT:** All right. Question?

14 **BY MR. BYARS:**

15 **Q.** Sir, did you -- were you asked this question and did you
16 give this answer?

17 "Q. In that case, there might be more CVE's
18 reported for Android because more members of the
19 public are able to identify and submit them
20 than, for example, in iOS; is that right?

21 "A. It wouldn't be possible if there weren't
22 vulnerabilities there. But given that there are
23 vulnerabilities, I think that is right."

24 Were you asked that question and did you give that answer?

25 **A.** Yes.

1 Q. Do you stand by that answer?

2 A. I do.

3 Q. Okay. Thank you.

4 I'd like to talk about the Nokia Threat Intelligence
5 Report that Apple's counsel showed you and the one that's
6 reproduced on slide 25 in your demonstrative.

7 Could you please look at DX4975 which was the Nokia
8 report?

9 A. (Reviewing document.)

10 Okay. I found it.

11 Q. Okay. So I know you were using this slide to compare
12 Android and iOS, but I'm interested in a different question.
13 Does this slide --

14 A. I'm sorry. Which slide?

15 Q. I'm sorry. I think I skipped ahead. It's 4975.8.

16 A. Okay.

17 Q. Okay. That's the slide that was -- you translated into
18 your demonstrative, right?

19 A. Right.

20 Q. Okay. And you were using this to compare Android and iOS,
21 right?

22 A. I -- I did make that comparison based on this slide.

23 Q. Okay. It's not possible to compare, using this slide, iOS
24 to Mac, is it?

25 A. No.

1 Q. Mac is not represented on the slide, is it?

2 A. (Reviewing document.)

3 When I read this, I assumed it was built into the Windows
4 PC section.

5 Q. Do you know that for sure, sir?

6 A. They don't say that, but it does make sense considering
7 they have iPhone, IOT, Windows/PC, and Android. But they --
8 think don't say one way or the other --

9 Q. Okay. So, sir, are you prepared to testify under oath
10 that you know Mac is included in Windows PC?

11 A. No.

12 Q. Okay.

13 I'd like you to flip the -- the page immediately prior
14 which is slide 7.

15 A. (Reviewing document.)

16 Okay.

17 Q. This one is titled "Malware in Mobile Networks." Do you
18 see that?

19 A. (Reviewing document.)

20 Yes.

21 Q. And it says Figure 2, monthly mobile infection rates since
22 January 2019.

23 Do you see that figure?

24 A. Yes.

25 Q. And I'm actually a little confused. Maybe you can help

1 me. The time scale on the bottom actually goes back to
2 October 2017, right?

3 **A.** Right.

4 **Q.** So perhaps this figure is actually representing monthly
5 mobile infection rates since October 2017, is that right?

6 **A.** (Reviewing document.)

7 **THE COURT:** We're on Figure 2 at .007?

8 **MR. BYARS:** Yes, Your Honor.

9 **THE COURT:** The first sentence says it shows monthly
10 since January 2019.

11 **MR. BYARS:** That's right, Your Honor.

12 But if you look at the figure, it goes -- it appears to go
13 all the way back to October 2017.

14 **THE COURT:** So you're saying they have a typo in
15 their document?

16 **MR. BYARS:** I'm con -- I'm simply confused. I'm not
17 sure 'cause the figure is also labeled January 2019. So I'm
18 asking actually the witness if he has investigated that, can
19 clear that up for us.

20 **THE WITNESS:** (Reviewing document.)

21 I mean, it is -- it is showing it from October 17th, but
22 the rest of document is about 2019. So perhaps they're just
23 including what led up to that for context.

24 **BY MR. BYARS:**

25 **Q.** Okay. So it's not clear, right?

1 **A.** There's something going on here with the dates.

2 **Q.** Okay. And I take it you hadn't investigated and resolved
3 this with Nokia or anybody else before you testified today?

4 **A.** I didn't notice that till you just now pointed it out.

5 **Q.** Okay. Thank you.

6 Am I right, though, that the line ends right about
7 .20 percent?

8 **A.** I'm sorry. I'm not sure what you just said.

9 **Q.** Sure. If you look at Figure 2.

10 **A.** Okay.

11 **Q.** The red line.

12 **A.** Right.

13 **Q.** Which represents monthly mobile infection rates since
14 January 2019; is that right?

15 **A.** That's what it says.

16 **Q.** And it ends -- it's hovering at the end of the time scale
17 around 0.20 percent; is that right?

18 **A.** You're saying that the red line at the end is around .2 --

19 **Q.** I am.

20 **A.** -- on the Y axis, yes.

21 **Q.** Okay. And the text actually says in the second paragraph
22 on the left column, "In 2020 the average percent of devices
23 infected each month was 0.23 percent."

24 **A.** Yes.

25 **Q.** Do you see that?

1 **A.** Yes.

2 **Q.** And the red line never went over .5 percent during
3 whatever time scale the graph is the meant to represent; is
4 that right?

5 **A.** That's what it looks like.

6 **Q.** And your understanding of this slide is that it would
7 include all of the infections in malware on Android that you
8 described previously, right?

9 **A.** (Reviewing document.)

10 Could I hear that again, please.

11 **Q.** Sure. This .2 percent figure would include all the
12 malware infections on Android and iOS and on any other mobile
13 device; is that right?

14 **A.** (Reviewing document.)

15 I'm sorry this is taking so long. I'm just trying to --

16 **Q.** That's okay.

17 Is it appropriate to infer that despite the fact this page
18 is one page away from the graphics that counsel for Apple put
19 in your demonstrative, you haven't actually investigated the
20 meaning of this slide?

21 **A.** That -- that is not true. What I'm wondering is if
22 perhaps there is a decimal point that shouldn't be there, that
23 they meant 23 percent. And that's what was taking me so long
24 to look to see if that made sense, if that was a typo.

25 **Q.** Okay. Slide 7 and slide 8 represent different figures,

1 right?

2 **A.** (Reviewing document.)

3 Right.

4 **Q.** Slide 8 represents infections by device, right?

5 **A.** (Reviewing document.)

6 Yes.

7 **Q.** So of the existing infections, those are the devices that
8 they're on, right?

9 **A.** Right.

10 **Q.** Slide 7 represents the percentage of infected mobile
11 devices observed monthly, right?

12 **A.** Yes.

13 **Q.** Okay. So are you prepared to testify under oath that this
14 should actually be something higher than .2 percent?

15 **A.** No. No, I think that's right.

16 **Q.** Okay. Thank you.

17 And you said on direct, I believe you talked to Trystan
18 Kosmyinka who heads app review for Apple, right?

19 **A.** I did.

20 **Q.** And if he had given testimony that there's malware that
21 doesn't actually activate or perform any malicious actions,
22 you wouldn't have any cause to dispute that, would you?

23 **A.** I -- you're saying that there's malware but it doesn't do
24 anything?

25 **Q.** I'm asking you if you he gave evidence that there was

1 malware that didn't actually activate and perform any
2 malicious actions, would you have cause to disagree with that?

3 **A.** I'm trying to understand, are you saying latent malware
4 that hasn't done its --

5 **Q.** Sir, I'm just asking if you have cause to disagree with
6 that.

7 **THE COURT:** The question is confusing.

8 **MR. BYARS:** Thank you, Your Honor.

9 **THE COURT:** Say it again.

10 **BY MR. BYARS:**

11 **Q.** There's malware that doesn't activate or perform any
12 malicious actions, right?

13 **A.** There is.

14 **Q.** Okay. And so the -- of the .2 percent, some of that
15 malware may never activate or perform any malicious actions;
16 isn't that right?

17 **A.** Well, that wouldn't have shown up in this study.

18 **Q.** Do you know that for sure, sir?

19 **A.** Based on their methodology, that is -- that's how I
20 understand it.

21 **Q.** Okay. Could you please look at slide 12 in this.

22 **A.** (Reviewing document.)

23 **Q.** Are you with me?

24 **A.** Yes.

25 **Q.** Okay. So slide 12 says top 20 residential network

1 infections, correct?

2 A. Yes.

3 Q. And there is only one infection in this list of top 20
4 that is expressly associated with Mac, right?

5 A. With what?

6 Q. With the Mac.

7 A. (Reviewing document.)

8 Q. Can I help you out?

9 A. I found it. I just found it.

10 Q. Okay. What did you find?

11 A. The Mac Downloader Shlayer.

12 Q. Okay. Are you familiar with this infection?

13 A. I am not.

14 Q. Okay. So you're not aware that this infection achieved
15 some notoriety for being the first malware that was notarized
16 by -- by Apple?

17 A. I'm not.

18 Q. So you haven't investigated this infection?

19 A. No.

20 Q. Okay. If you would look, please, at tab 1239 in your
21 binder, in the black binder.

22 A. (Reviewing document.)

23 MR. BYARS: And I'm going to ask Mr. Rudd not to
24 display this which is still marked confidential.

25 THE WITNESS: (Reviewing document.)

1 **BY MR. BYARS:**

2 **Q.** Sir, you haven't seen this document before, I take it?

3 **A.** (Reviewing document.)

4 It does not look familiar to me.

5 **Q.** Okay. And without getting into details given its
6 confidentiality designation, this is an email among Apple
7 employees including Mr. Schiller and Mr. Federighi, right?

8 **A.** I'm sorry. I was on 1238.

9 **Q.** I'm sorry. 1239 is where we should be.

10 **A.** Okay.

11 **Q.** Do you need the question again?

12 **THE COURT:** I don't see this in evidence.

13 **MR. BYARS:** It is not yet, Your Honor.

14 **THE COURT:** Okay.

15 **THE WITNESS:** I am not familiar with this document.

16 **BY MR. BYARS:**

17 **Q.** Okay. And this is an email, though, between Apple
18 employees, or appears to be, in your understanding, including
19 Mr. Schiller and Mr. Federighi?

20 **A.** That's what it appears to be.

21 **Q.** Okay. And the bottom of the first page mentions Shlayer,
22 right?

23 **A.** (Reviewing document.)

24 It says that.

25 **Q.** Okay. And I'll represent that this is what follows that

1 italics is actually copied from the *Wired* article that is
2 mentioned in the text.

3 **A.** (Reviewing document.)

4 **Q.** And I really want to point to you to one thing on page 2.

5 **A.** I'm on page 2.

6 **Q.** Okay. And if you look at paragraph 5, it reads, and I'm
7 going to read this 'cause it's from the *Wired* article:

8 "Wardle notified Apple about the rogue software on
9 August 28 and the company revoked the Shlayer notarization
10 certificates that same day, neutering the malware anywhere
11 that it was installed and for future downloads."

12 Do you see that?

13 **A.** I see that.

14 **Q.** And then the last paragraph says:

15 "'Malicious software constantly changes, and Apple's
16 notarization system helps us keep malware off the Mac and
17 allow us to respond quickly when it's discovered,' the company
18 said in a statement. 'Upon learning of this adware, we
19 revoked the identified variant, disabled the developer
20 account, and revoked the associated certificates. We thank
21 the researchers for their assistance and keeping our users
22 safe.'"

23 Do you see that?

24 **A.** I see that.

25 **Q.** Is that consistent with your understanding of how

1 notarization works on the Mac?

2 **A.** This is more of a recovery from a notarization problem as
3 opposed to how notarization works.

4 **Q.** It's a statement from Apple, though, right?

5 **A.** It is.

6 **Q.** So you would defer to their explanation of how
7 notarization works?

8 **A.** Yes.

9 **Q.** Okay. Now if there are demonstratives that show the
10 various distribution methods, there was one that was direct,
11 one that was centralized, one that was multiple app stores,
12 none of those depicted the notarization process, right?

13 **A.** Right.

14 **Q.** I'd like to change topics and go to iOS threat model.

15 You believe -- and you understand what I mean by threat
16 model, right? It's addressed in your written direct
17 testimony?

18 **A.** I do.

19 **Q.** Okay. You believe it's industry best practice for device
20 manufacturers to perform a formal security analysis of a
21 product before bringing it to market, right?

22 **A.** I do.

23 **Q.** And a formal security analysis includes developing a
24 threat model, right?

25 **A.** It is part of it.

1 Q. And a threat model would enumerate vulnerabilities,
2 weakness, and defects in any computer system?

3 A. That would be part of it.

4 Q. Okay. Is that it, though?

5 A. No.

6 Q. Okay. Let me -- let me ask it again.

7 The threat model would do this, would enumerate
8 vulnerabilities, weaknesses, and defects, right?

9 A. It would.

10 Q. Okay. And you believe that any evaluation of a security
11 of iOS must consider the threat model, right?

12 A. I think an evaluation of a system needs to include a
13 threat model.

14 Q. A system including iOS; isn't that right?

15 A. Yes.

16 Q. Okay. Now in preparation for developing your opinions, as
17 you discussed previously, you had access to Apple engineers,
18 right?

19 A. I did.

20 Q. Okay. And you spoke with several individuals to gather
21 information in forming your opinions, right?

22 A. I did.

23 Q. That included, as we said, Mr. Kosmyuka, right?

24 A. Yes.

25 Q. Mr. Eric Friedman?

1 **A.** Yes.

2 **Q.** He runs the Apple fraud engineering algorithms and risk
3 team; is that right?

4 **A.** Right.

5 **Q.** And there may have been others, right?

6 **A.** I think so.

7 **Q.** Okay. You did not discuss with any of these people
8 whether Apple had performed a formal security analysis before
9 the iPhone was brought to market, right?

10 **A.** I did not discuss that.

11 **Q.** Okay. And you did not discuss with these people, these
12 Apple engineers, whether Apple developed a threat model before
13 the iPhone was brought to market, right?

14 **A.** I did not have that discussion.

15 **Q.** And you also had access to confidential Apple documents.
16 I believe you testified that you signed the protective order
17 earlier.

18 **A.** Yes.

19 **Q.** And they obviously -- Apple could have given you those
20 documents had they chose, right?

21 **A.** I suppose so.

22 **Q.** And do you remember at your deposition I asked you if you
23 have seen contemporaneous documentation of Apple having
24 performed a security analysis or developed a threat model
25 before bringing the iPhone to market? Do you remember me

1 asking you that?

2 **A.** I do. I remember not understanding what contemporaneous
3 meant.

4 **Q.** Okay. Eventually we got there, though. Didn't we
5 eventually get to the clear question?

6 **A.** We did.

7 **Q.** Okay. And you were not able to identify one at that
8 point; isn't that right?

9 **A.** That's right.

10 **Q.** Now, another step in a security analysis is the
11 construction of a set of policy invariants, right?

12 **A.** Yes.

13 **Q.** Policy invariants describe how the system is supposed to
14 function as envisioned by its creators and stakeholders,
15 right?

16 **A.** Yes.

17 **Q.** And in this case, the creators and stakeholders refer to
18 the people who developed the iPhone, right?

19 **A.** Yes.

20 **Q.** You didn't ask anybody at Apple for their set of policy
21 invariants for the iPhone, right?

22 **A.** Right.

23 **Q.** You didn't see any such policy invariants for the iPhone,
24 right?

25 **A.** Right.

1 Q. In fact, you just assumed based on those conversations you
2 had that they had created policy invariants; isn't that right?

3 A. Right.

4 Q. Now, you believe iOS faces an extraordinary threat model,
5 right?

6 A. An extraordinary threat.

7 Q. It has an extraordinary threat model, right?

8 A. Yes.

9 Q. Okay. And this threat model, in your view, has caused
10 Apple to employ extraordinary security features, right?

11 A. Yes.

12 Q. And that includes, as you described it, centralized app
13 distribution, right?

14 A. Yes.

15 Q. One reason you believe iPhone has an extraordinary threat
16 model is the number of apps available in the App Store today,
17 right?

18 A. That's true.

19 Q. Okay. 2 million today, right? Or almost.

20 A. I've heard that in this case.

21 Q. Okay. And you've actually testified to that in this case,
22 haven't you?

23 A. I may have.

24 Q. Okay. All right. Thanks.

25 A number of -- another reason for the extraordinary threat

1 model of the iPhone is a number of app downloads today, right?

2 **A.** Yes.

3 **Q.** In your view, correct?

4 **A.** Yes.

5 **Q.** Now, if there were evidence in the case that Apple had no
6 reason to believe that there would be this many apps or this
7 many app downloads when they launched the App Store, those
8 numbers could not have affected their development of an iPhone
9 threat model before it was launched, right?

10 **A.** I'm -- I'd like you to please clarify that question.

11 **Q.** Yeah, sure.

12 So if Apple didn't know before they launched the iPhone
13 that there would be 2 million apps and 180 million app
14 downloads, and they didn't know that when they launched the
15 App Store, those numbers could not have affected their
16 development of a threat model, right?

17 **A.** Not necessarily.

18 **Q.** Let me try it again.

19 If there was evidence that these numbers were never
20 contemplated by Apple at the time they launched the App Store,
21 they could not have possibly taken those numbers into account
22 when they developed a threat model before they launched the
23 App Store, right?

24 **A.** If they never contemplated it, they wouldn't have put it
25 in their threat model.

1 Q. Okay. Thank you.

2 Another reason you believe the iPhone has an extraordinary
3 threat model is that it has hardware features that could
4 expose a user in private moments, right?

5 A. Yes.

6 Q. For example, iPhones have built-in microphones, right?

7 A. Yes.

8 Q. They have built-in cameras, right?

9 A. Yes.

10 Q. The Mac also has a built-in camera, though, right?

11 A. Right.

12 Q. And the -- the Mac also has a built-in microphone, right?

13 A. Yes.

14 Q. So Macs also have hardware that could expose a user in
15 private moments, right?

16 A. Well, there would be fewer private moments, but, yes.

17 Q. That is correct, right?

18 A. Yes.

19 Q. Okay. And one reason, in your opinion, there are fewer
20 private moments is where the device goes with the user, right?

21 A. Right.

22 Q. But Macs obviously are with users in their most private
23 moments, right?

24 A. Mine isn't. I don't know.

25 Q. Okay. So you don't know whether users use Macs in their

1 most private moments?

2 **A.** I would imagine they don't.

3 **Q.** Okay. Are you prepared to testify under oath that they
4 don't?

5 **A.** No. I mean I'm being a little tongue in cheek because I
6 think it's pretty clear that your phone is with you in more
7 sensitive times than your Mac is.

8 **Q.** Okay, sir, could you just focus on my questions, please.

9 **A.** Sure.

10 **Q.** Some people might use Mac in the office, right?

11 **A.** Yes.

12 **Q.** While they're working on confidential business, right?

13 **A.** Yes.

14 **Q.** Okay. Some people might use Macs at home in their living
15 rooms, right?

16 **A.** They could.

17 **Q.** Some people might even use Macs at home in their bedrooms,
18 right?

19 **A.** They could.

20 **Q.** Okay. And these are private moments, right?

21 **A.** Yes.

22 **Q.** Thank you.

23 Now when comparing threat models such as between the
24 iPhone and Mac, you would have to take into account the types
25 of information that people store on these devices, right?

1 **A.** Yes.

2 **Q.** And you'd agree that if one of the products stored more
3 information than the other, then their threat models would be
4 less similar than if they stored the same information,
5 correct?

6 **A.** Yes.

7 **Q.** In fact, if Mac stored the same kind of information as
8 iPhones did, that would affect your comparison of their threat
9 models, right?

10 **A.** If it was exactly the same --

11 **Q.** Sir, is it -- is it yes or no?

12 **A.** Let me please hear it again.

13 **Q.** Sure.

14 Whether Macs store the same information or similar
15 information would affect -- would be a factor you'd consider
16 when comparing their threat models, right?

17 **A.** Yes.

18 **Q.** Okay. But you haven't conducted any empirical study to
19 compare the types of information that people keep on their
20 iPhones versus their Mac, have you?

21 **A.** I am a very heavy user of both so I have an idea.

22 **Q.** Okay. But, sir, the question was you haven't conducted an
23 empirical study of that, have you?

24 **A.** I have not.

25 **Q.** Okay.

1 You do agree, however, that people can sync information
2 between their Macs and their iPhones?

3 **A.** Yes.

4 **Q.** Okay. Like their photos, they can sync, right?

5 **A.** Yes.

6 **Q.** Their calendar information, they can sync?

7 **A.** Yes.

8 **Q.** Their contact information, they can sync?

9 **A.** Yes.

10 **Q.** You're also aware that people can store their passwords in
11 iCloud, right?

12 **A.** Yes.

13 **Q.** And they can also store credit card information in iCloud,
14 right?

15 **A.** Yes.

16 **Q.** And information that is stored on iCloud can be accessed
17 on any Apple device, right?

18 **A.** Yes. Well --

19 **Q.** Including the Mac and the iPhone?

20 **A.** Yeah, those two, yes.

21 **Q.** At least those two, right?

22 **A.** Yes.

23 **Q.** Okay. Thank you.

24 Users can also use their Apple devices to access their
25 same email and their messages on separate devices, right?

1 **A.** They can.

2 **Q.** Including on Macs and iPhones, right?

3 **A.** Yes.

4 **Q.** And you'd agree that people have sensitive information in
5 their email, right?

6 **A.** They can.

7 **Q.** Okay. In your opinion, however, users cannot sync the
8 most sensitive information that is kept on iOS, right?

9 **A.** Right.

10 **Q.** That sensitive information includes payment information
11 that is used for Apple Pay, right?

12 **A.** That's right.

13 **Q.** It also includes biometric information that is used for
14 Touch ID?

15 **A.** Yes.

16 **Q.** And biometric information that is used for Face ID, right?

17 **A.** Yes.

18 **Q.** That information is stored on a special chip in an iPhone
19 called the Secure Enclave, right?

20 **A.** Enclave, yes.

21 **Q.** Enclave. Thank you. I was going to ask you if you knew.
22 I did not.

23 The Secure Enclave is designed to provide an extra layer
24 of protection for this most sensitive information, right?

25 **A.** Yes.

1 Q. The Secure Enclave is designed to keep the information
2 secure even if the application processor on the iPhone is
3 compromised, right?

4 A. Yes.

5 Q. The application processor is another chip that runs
6 applications on the iPhone, right?

7 A. Yes.

8 Q. Mac computers being sold today also have a Secure Enclave,
9 right?

10 A. Yes.

11 Q. Mac computers being sold today also offer Touch ID, right?

12 A. Some.

13 Q. Some of them do. Some of the Mac computers being sold
14 today offer Touch ID, right?

15 A. Yes.

16 Q. And these Mac computers would store the same kind of
17 biometric information that would be stored on iPhone for
18 Touch ID, right?

19 A. Yes.

20 Q. And Apple Pay is also available on Mac computers being
21 sold today, right?

22 A. Yes.

23 Q. Now another reason you believe that iPhone threat model is
24 extraordinary is that iOS devices have sensor hardware that
25 tracks their users' location and movement patterns, right?

1 **A.** Yes.

2 **Q.** Macs also can detect the device's location, right?

3 **A.** Not as well.

4 **Q.** But they can do so, right?

5 **A.** To a -- to a general approximation.

6 **Q.** Okay. And Mac apps and websites can gather and use this
7 location information that is -- that is identified by the Mac,
8 right?

9 **A.** Right.

10 **Q.** I want to talk about one of the other aspects of your
11 iPhone security model which is automated manual review. One
12 of the opinions you offer in this case is that app review
13 provides significant security benefits, right?

14 **A.** I -- I just don't know what you mean by automated manual
15 review.

16 **Q.** Okay. Perhaps we can work it out.

17 Do you have your rebuttal expert report in front of you in
18 one of the coils.

19 **A.** (Reviewing document.)

20 **Q.** I'm sorry you're so burdened with so much paper.

21 **A.** It challenging with this microphone and the mask.

22 **Q.** I understand.

23 **A.** Let's see.

24 (Reviewing document.)

25 Okay. I've got it.

1 Q. And could you please go to paragraph 99.

2 A. (Reviewing document.)

3 Q. Are you with me?

4 A. Yes.

5 Q. And you say here, "I attribute iOS security to four
6 aspects of its security model." Right?

7 A. Right.

8 Q. And we went over those earlier, one of which is a manual
9 and automated app review process, right?

10 A. Right. I didn't hear you say the word "and," so the
11 confusion.

12 Q. It's probably the multiple layers of plastic between us,
13 I'm guessing.

14 A. Yes.

15 Q. And I'll slow down a little too.

16 So app review enforces the App Review Guidelines, right?

17 A. Yes.

18 Q. That's its directive is to do that, from your
19 understanding; is that right?

20 A. That's right.

21 Q. Some of the App Review Guidelines have a primary focus on
22 something other than security; isn't that right?

23 A. That's correct.

24 Q. And you'd expect that app review enforces those guidelines
25 too, right?

1 **A.** Yes.

2 **Q.** Now, I saw on your demonstrative, you -- and as you
3 described your assignment on direct, you said that one aspect
4 was to generate real-life data or to gather real-life data; is
5 that right?

6 **A.** That was part of my assignment.

7 **Q.** And you also were meant to evaluate app review, right?
8 And the security benefits it provides, right?

9 **A.** Yes.

10 **Q.** But you haven't done any empirical analysis of the
11 security of apps that are actually distributed through the App
12 Store, have you?

13 **A.** I haven't done a review like that.

14 **Q.** Okay. You haven't done an empirical analysis, right?

15 **A.** Right.

16 **Q.** And you haven't done an empirical analysis of the privacy
17 of apps that are distributed right now through app review,
18 have you?

19 **A.** Right. That -- that wasn't my assignment.

20 **Q.** Okay.

21 And you haven't done any empirical analysis of the
22 reliability of apps distributed through the App Store; is that
23 right?

24 **A.** That's correct.

25 **Q.** Now, Mr. Friedman, who runs Apple's FEAR team, is one of

1 the employees that you talked to in developing your opinions,
2 right?

3 A. That's correct.

4 Q. Now I notice you haven't addressed the evidence that
5 Mr. Friedman offered in this case; is that right?

6 A. I'm sorry. I haven't addressed it?

7 Q. In your testimony, have you?

8 A. I don't think I did.

9 Q. Okay. So you didn't address Mr. Friedman's observation
10 that app review was bringing a plastic butter knife to a
11 gunfight, have you?

12 A. I didn't address that.

13 Q. You didn't address Mr. Friedman's view to another Apple
14 employee that the employees should regard app review as a
15 little more than the equivalent of the TSA at the airport, did
16 you?

17 A. I didn't address that.

18 Q. You're familiar with what a KPI is?

19 A. I -- I might need some context --

20 (Simultaneous colloquy.)

21 **BY MR. BYARS:**

22 Q. Okay. What key performance indicator, does that help?

23 A. Sure.

24 Q. Okay. You didn't address Mr. Friedman's finding in the
25 last few years that app review's KPI is how many apps we can

1 get through the pipe, right?

2 **A.** I didn't address that.

3 **Q.** Okay. And Mr. Friedman's view that app review is not
4 being measured by what ex -- exotic exploits can app review
5 detect, right?

6 **A.** Right. I used Mr. Kosmyuka for my understanding of the
7 app review process.

8 **Q.** Okay. And you ignored what Mr. Friedman had to say,
9 right?

10 **A.** No, because he and I spoke about other things.

11 **Q.** Okay. You didn't speak about this evidence that he
12 offered in this case?

13 **THE COURT:** Slow down, sir.

14 **MR. BYARS:** I'm sorry, Your Honor.

15 **THE WITNESS:** No.

16 **BY MR. BYARS:**

17 **Q.** Okay.

18 Now, of the four aspects of the iOS security model that we
19 just went over again, you would agree that manual and
20 automated app review is the one that is most directly related
21 to the need for exclusive distribution, right?

22 **A.** I think that's a fair comment.

23 **Q.** Okay.

24 Let's talk about the automated portion of app review now.
25 That includes static and dynamic analysis, right?

1 **A.** Right.

2 **Q.** Those are common techniques in computer security, right?

3 **A.** Yes.

4 **Q.** You'd agree that these have an enormous impact on the
5 security of a system, right?

6 **A.** They are able to identify many problems.

7 **Q.** They have an enormous impact on security; isn't that
8 right?

9 **A.** Yes.

10 **Q.** But in terms of time and cost needed to use them, they are
11 negligible; isn't that right?

12 **A.** In the larger scheme of things, they run pretty quickly.

13 **Q.** Okay.

14 Let's talk about manual review now.

15 With respect to manual review, other app stores could
16 implement a manual review, right?

17 **A.** They can't do Apple's, but they could do one.

18 **Q.** Okay. They could do a manual review.

19 **A.** Yes.

20 **Q.** And if they had all of Apple's resources and all of
21 Apple's money, they could put in their own manual review
22 process, right?

23 **A.** They would still need access to Apple's knowledge base and
24 their familiarity with their platform. But if you cloned
25 Apple and made another Apple --

1 Q. Sir, sir, I'm sorry, I'm on a clock and I just want a yes
2 or no. Right?

3 A. Sure.

4 Q. If they had the money and resources that Apple did, they
5 could implement their own manual process, right?

6 A. They might need more.

7 Q. Okay. Sir, could I --

8 MR. BYARS: Your Honor, may I refer the witness to
9 his deposition, page 109, line 25 through the next page 110,
10 line 6.

11 THE WITNESS: (Reviewing document.)

12 THE COURT: You can read that.

13 MR. BYARS: Okay.

14 Q. Sir, were you asked this question and did you give this
15 answer?

16 "Q. They could implement their own human
17 manual review process in order to determine
18 whether the apps they distribute meet those
19 guidelines, right?

20 "A. I think if they put in the time and the
21 resources and the money that it would take to
22 develop it the way Apple did, then they could do
23 that."

24 Did I read that correctly?

25 A. You did.

1 Q. Do you stand by that answer?

2 A. I -- I think about it some more, I think they would need
3 more.

4 Q. So you don't stand by that answer?

5 A. I would revise that answer.

6 Q. Okay.

7 In fact, though, you have not actually assessed whether
8 another App Store could have put in the investment had they
9 been allowed to participate in the iOS ecosystem, right?

10 A. I don't think there are companies that -- too many
11 companies in the position to put in that investment.

12 Q. Okay. Sir, you haven't actually made an assessment of
13 that, have you?

14 A. I -- I mean, I -- I follow the news. I know Apple is the
15 largest company in the world. So I -- I haven't done any
16 analysis like that.

17 Q. Okay. Well, let me ask you a different question.

18 You actually haven't conducted any empirical analysis of
19 the amount of resources that Apple puts into app review,
20 right?

21 A. I have not done a study like that.

22 Q. Okay. You haven't done any study at all that I described,
23 right?

24 A. That's what I said.

25 Q. Okay. And you have not compared the amount of resources

1 that Apple puts into app review with any other app store, have
2 you?

3 **THE COURT:** Slow down again, Mr. Byars.

4 **MR. BYARS:** I'm so sorry, Your Honor.

5 **THE WITNESS:** I did compare it to the way Google's
6 app review goes, looking at some confidential documents.

7 **BY MR. BYARS:**

8 **Q.** But you did not compare the amount of resources that Apple
9 puts into app review compared to any other app store; isn't
10 that right?

11 **A.** In paragraph 57 of my written direct, I do compare the
12 resources that they put in.

13 **MR. BYARS:** Your Honor, I'd like to refer the witness
14 to page 93, lines 14 through 25 in his deposition.

15 **THE WITNESS:** (Reviewing document.)

16 **THE COURT:** Go ahead.

17 **BY MR. BYARS:**

18 **Q.** Sir, were you asked this question and did you give this
19 answer?

20 "Q. So have you conducted any empirical
21 analysis of the amounts of resources that Apple
22 puts into app review compared to other app
23 stores or app distributors?

24 "A. With my various conversations, I'm just
25 going to use first name, Trystan and other Apple

1 engineers, I got a sense of the amount of effort
2 and time they put in, but I have not compared
3 them to Google.

4 "Q. Okay. Have you compared it to any
5 other app store?

6 "A. No."

7 Did you -- did you give those answers?

8 A. I gave those answers.

9 Q. Okay. You stand by those answers?

10 A. I would revise those answer.

11 Q. Okay, this is another answer that you would revise?

12 A. Yes.

13 Q. Okay.

14 THE COURT: Five minutes.

15 MR. BYARS: Thank you, Your Honor.

16 Q. In fact, you have no understanding of how much money Apple
17 puts into conduct human app review, right?

18 A. I -- I don't know that number.

19 Q. In fact, you don't know the financials, do you?

20 A. I don't.

21 Q. Okay.

22 Nor do you know -- I'm sorry.

23 Nor have you looked at what another hypothetical app store
24 that was allowed to participate in iOS could do or would have
25 done, have you?

1 **A.** Could you please repeat the question?

2 **Q.** Sure.

3 You have not looked at what another hypothetical app store
4 they were allowed on iOS would have or could do, isn't that
5 right?

6 **A.** What they would have?

7 **Q.** Yes. What tools they would have, for example.

8 **MR. LO:** Your Honor.

9 **THE COURT:** Sir.

10 **MR. LO:** This now calls for testimony that was
11 stricken under the Court's order last night.

12 **MR. BYARS:** Your Honor, I'm not talking about
13 incentives. I'm talking about resources.

14 **THE COURT:** Well, then you better rephrase your
15 question. Otherwise you're going to open a door and he's
16 going to be allowed to answer.

17 **MR. BYARS:** Thank you for that warning, Your Honor.
18 I'll move on.

19 **Q.** Now, sir, you would agree that Apple sells security and
20 privacy as a brand, right?

21 **A.** Yes.

22 **Q.** Other app stores that were allowed to participate in iOS
23 could also, if they wished, sell security and privacy as a
24 brand, right?

25 **A.** I suppose they could.

1 Q. And other app stores could educate people about what steps
2 they were taking to protect people, right?

3 A. They could try.

4 Q. They could, couldn't they?

5 A. Yes.

6 Q. Okay.

7 They could publish statistics, for example, about the
8 number of bad apps that they provide compared to others,
9 right?

10 A. They could do that.

11 Q. Sir, you've expressed the opinion -- correct me if I'm
12 wrong -- that bad apps distributed by another app store might
13 be blamed on the device manufacturer compared to the app store
14 that distributed it, right?

15 A. Right.

16 Q. Okay. That's your view, isn't it?

17 A. Yes.

18 Q. And you gave an example, if you recall, the Baby Shaker
19 app. Do you recall that?

20 A. I do.

21 Q. Okay. And that was an app -- an iOS app, right?

22 A. Yes.

23 Q. It went through app review, right?

24 A. Yes.

25 Q. And it was an app that had a picture of a baby on it kind

1 of crudely drawn, right?

2 **A.** I haven't seen it, but I understand that there was some
3 image of a baby.

4 **Q.** Okay. And if you shook the image of a baby hard enough,
5 there would be red X's over the baby's eyes, right?

6 **A.** Right.

7 **Q.** And you used this an example of people blaming a bad app
8 on the device maker as opposed to the app distributor, right?

9 **A.** Right.

10 **Q.** But you haven't actually looked at another example of
11 this, for example, in the Android ecosystem, right?

12 **A.** I didn't give an example in my report.

13 **Q.** This is the only example you gave, right?

14 **A.** Yes.

15 **Q.** But in the Android ecosystem, you could, in fact, have a
16 bad app that came from an app store that was not affiliated
17 with the device maker, that was not affiliated with the
18 operating system maker, right?

19 **A.** You could.

20 **Q.** Could be a Google OS, Android, right? Samsung device,
21 right?

22 **A.** Sure.

23 **Q.** And say Aptoide App Store, right?

24 **A.** It could be.

25 **Q.** And you could have done a study to determine which app

1 store or device maker or Android -- or operating system maker
2 would be blamed for a bad app, right?

3 **A.** I don't think I could do a study like that.

4 **Q.** Well, you haven't done a study, right?

5 **A.** Right.

6 **Q.** In fact, you could have done a study like this. You could
7 have tested this hypothesis, right?

8 **A.** I don't do survey research. I wouldn't know how to do
9 that study.

10 **Q.** Okay. That's not your area of expertise, right?

11 **A.** I am an expert on security of mobile platforms, but not on
12 conducting surveys. So I would -- if I needed a survey like
13 that, I would find someone to do that survey.

14 **Q.** Okay. So instead you used an example without conducting a
15 survey, right?

16 **A.** I used an example to clarify the point I was making.

17 **Q.** Okay. And the point you were making, to be clear, is that
18 people are necessarily going to blame the device maker for a
19 bad app on their phone, right?

20 **A.** I wasn't saying necessarily. I was saying some people
21 will blame it.

22 **Q.** Okay. And the only example you came up with was a bad
23 app, it was on an Apple phone, and also got through Apple app
24 review, right?

25 **A.** That's the example I gave.

1 **MR. BYARS:** Your Honor, this may be a good place to
2 stop.

3 **THE COURT:** How much more do you have?

4 **MR. BYARS:** I would say at least 20, 25 minutes, Your
5 Honor.

6 **THE COURT:** Okay.

7 All right. And you understand, Mr. Rubin, that the first
8 witness for tomorrow will be Mr. Cook?

9 **THE WITNESS:** I'm aware.

10 **THE COURT:** Okay. During the break, you are
11 instructed not to speak to anyone, including the lawyers or
12 anyone else, with respect to your testimony. Do you
13 understand?

14 **THE WITNESS:** Yes, Your Honor.

15 **THE COURT:** All right. Unfortunately, I don't know
16 if there's a basketball game on or something. But you can't
17 do anything with respect to this case. You understand?

18 **THE WITNESS:** I understand.

19 **THE COURT:** Okay. At least not with anyone else.
20 Okay.

21 **THE WITNESS:** Okay.

22 **THE COURT:** All right. Well, let's --
23 You can step down at this point.

24 Let me see. I have some information now.

25 Mr. Doren, Ms. Forrest.

1 So I obviously have not read what was handed up to me by
2 Ms. Forrest with respect to the deposition testimony.

3 **MR. DOREN:** Your Honor, in terms of the deposition,
4 two things. First of all, I would also cite the Court to
5 403:14 to 17.

6 **THE COURT:** Hold on. Let me get it.

7 **MR. DOREN:** Yes, Your Honor.

8 **MS. FORREST:** I gave away both my copies so --

9 **MR. DOREN:** You can have this one back.

10 **MS. FORREST:** All right. Thank you.

11 **THE COURT:** All right. So.

12 **MR. DOREN:** 403:14 to 17.

13 **THE COURT:** Anything else, Mr. Doren?

14 **MR. DOREN:** And in the second cite is 315:16 to 20.

15 No, I'm sorry, I went in reverse order there.

16 **THE COURT:** Okay.

17 All right. And Ms. Forrest, here you've got page 81.

18 **MS. FORREST:** Yes, lines 18 to 21.

19 And, Your Honor, if it would be of any assistance, I can
20 walk very briefly through the thinking and the -- the line of
21 reasoning.

22 (Pause in the proceedings.)

23 **THE COURT:** Okay. So in these three segments, he
24 says first he couldn't recall whether there were in-app
25 purchases. And then in response to Mr. Rifkin, he clearly

1 says, it seems to me, that there were no in-app purchases.

2 And then he says again at 403 there were no in-app purchases.

3 So that's -- so he's saying there's no in-app purchases.

4 **MS. FORREST:** Your Honor.

5 **THE COURT:** That's what he says explicitly.

6 So what's the issue?

7 **MS. FORREST:** The issue is that there's a difference
8 between the functionality for in-app purchases, which did not
9 exist and we don't dispute that it didn't exist before 2009,
10 and whether there were merchants who were offering in-app
11 purchasing opportunities prior to that, which clearly the
12 evidence demonstrates that it does.

13 So he was saying there wasn't in-app purchase
14 functionality in terms of the formal launch of that. We don't
15 dispute that. That occurred when Apple launched it.

16 But the record is clear that factually, app developers had
17 developed in-app purchasing opportunities through their own
18 methods prior to that and were using them actively.

19 **MR. DOREN:** So --

20 **MS. FORREST:** And Apple knew about that.

21 **MR. DOREN:** So two points, Your Honor.

22 First of all, if the record is clear on that, there's no
23 need for a rebuttal case.

24 Secondly, Your Honor is correct in her reading of the
25 second two installments from Mr. Schiller's deposition where

1 there isn't a reference to IAP functionality. It's questions
2 specifically about whether there were in-app purchases, and
3 that is what Mr. Schiller testified to.

4 Third, at trial, while Mr. Schiller was being crossed,
5 when the Forstall clip was played for him -- and by the way,
6 Your Honor, there's other Forstall testimony in the record
7 that puts that into context -- Mr. Schiller simply responded,
8 "I don't agree with that." He got the question, "Are you
9 sure?" And he said, "As sure as I can recall."

10 **THE COURT:** All right.

11 **MS. FORREST:** But -- but -- but, Your Honor, I just
12 want to make absolutely clear what we're saying, which is for
13 instance, page 403, line 14 to 17, there he is asked,
14 "Mr. Schiller, when the App Store launched, there was no IAP;
15 is that correct?"

16 "That is correct."

17 That, Your Honor, is absolutely consistent with what we're
18 saying.

19 **THE COURT:** So here's the -- here's where I stand.
20 The record is the record. Whatever it is, there will be no
21 addition.

22 I think it may be confusing. I see where you were trying
23 to get with his -- with his examination, but I'm just going to
24 take the record as it is.

25 So everybody knew what was going on, and the fairest thing

1 is to leave the playing field as the playing field.

2 **MS. FORREST:** Well, Your Honor, tomorrow during the
3 testimony of Mr. Cook, I take it we would not be prohibited
4 from proceeding with him as we would with any other fact
5 witness, particularly one who is an Apple percipient
6 witness --

7 **THE COURT:** Correct.

8 **MS. FORREST:** -- in this case.

9 **THE COURT:** Absolutely.

10 **MS. FORREST:** So we will then proceed in that manner,
11 Your Honor.

12 **MR. DOREN:** And, Your Honor, earlier today you had
13 suggested, perhaps ordered, that Epic turn over the documents
14 that they thought stood for this proposition and that they now
15 make seek to use with Mr. Cook. And we have not yet received
16 those documents so we would seek guidance from the Court on
17 that point.

18 **MS. FORREST:** Well, now you're --

19 **THE COURT:** It's cross-examination.

20 **MR. DOREN:** All right.

21 **THE COURT:** You can do your own search. You know
22 what they're looking at.

23 **MR. DOREN:** Very well, Your Honor. Thank you.

24 **THE COURT:** And, you know, Mr. Cook was also not
25 there in 2008, 2009. So I don't know what kind of information

1 he's going to have.

2 But the playing field is the playing field. And I'm not
3 going to let in something late.

4 Here's your deposition back.

5 Okay. We'll stand in recess until 8:00 o'clock tomorrow
6 morning.

7 **MR. DOREN:** Thank you, Your Honor.

8 (Proceedings were concluded at 3:24 P.M.)

9 --o0o--

CERTIFICATE OF REPORTERS

We, Diane E. Skillman, Pamela Batalo-Hebel, and Raynee Mercado certify that the foregoing is a correct transcript from the record of proceedings in the above-entitled matter. We further certify that we are neither counsel for, related to, nor employed by any of the parties to the action in which this hearing was taken, and further that we are not financially nor otherwise interested in the outcome of the action.

_____/S/DIANE E. SKILLMAN_____

Diane E. Skillman, CSR, RPR, FCRR

_____/S/ PAMELA BATALO-HEBEL_____

Pamela Batalo-Hebel, CSR, RMR, FCRR

_____/s/ Raynee Mercado_____

Raynee Mercado, CSR, RMR, FCRR

Thursday, May 20, 2021